

Australian Energy Market Commission

# ELECTRICITY PRICE TRENDS FINAL REPORT

Possible future retail electricity price movements: 1 July 2012 to 30 June 2015

22 March 2013

REVIEW

Reference: EPR0029 Electricity price trends report EMBARGO until 22 March 2013

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#### About the AEMC

The Council of Australian Governments (COAG), through its then Ministerial Council on Energy (MCE), established the Australian Energy Market Commission (AEMC) in July 2005. In June 2011, COAG established the Standing Council on Energy and Resources (SCER) to replace the MCE. The AEMC has two main functions. We make and amend the national electricity, gas and energy retail rules, and we conduct independent reviews of the energy markets for the SCER.

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## Box 1: Important note

This report is intended to identify the trends, and report on the drivers of those trends, in Australian residential electricity prices.

This report does not provide, and should not be regarded as providing, forecasts of future residential electricity prices and particularly of the regulated retail prices which are set by jurisdictional regulators.

The estimates of prices and trends in this report are based on the modelling undertaken by Frontier Economics, and information and data from jurisdictional governments and regulators, and the Australian Energy Regulator. References to estimations in this report are therefore based on these inputs.

As the data collection underlying this report was largely completed by late 2012, not all subsequent policy initiatives or regulatory changes could be included, such as:

- the recent change made by the Northern Territory Government with respect to the 1 January 2013 regulated electricity price increase;
- the South Australian Government decision to deregulate electricity prices from 1 February 2013 and their agreement with AGL to reduce regulated retail prices for eligible customers by 9.1 per cent;
- the outcomes of the Queensland Competition Authority's draft retail price determination, released in February 2013; and
- determinations by the Australian Energy Regulator in relation to cost pass-through applications for feed-in tariffs for ActewAGL (Australian Capital Territory) and Ergon Energy and Energex (Queensland), published on 10 January 2013, and in relation to a cost pass-through application for the National Energy Customer Framework for ActewAGL (Australian Capital Territory), published on 18 January 2013.

In Victoria, there is no retail price regulation but each retailer is nevertheless required to determine and publish a standing offer price. This is to be offered to domestic or small business customers for which the retailer has responsibility for supply. The retail electricity prices estimated for Victoria in this report are based on these published retail standing offers and are not directly comparable with regulated offers in other jurisdictions.

Standing offers in Victoria differ in nature from the regulated retail prices in that they are produced by individual retailers, rather than being determined by a jurisdictional regulator or otherwise set by a jurisdictional government.

Standing offers will tend to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, the standing offers in that state are, on average, 12 per cent higher than current market offers.

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## **Executive summary**

## Purpose of report

This report is intended to identify the trends, and report on the drivers of those trends, in residential electricity prices. Consistent with the terms of reference set by the Standing Council on Energy and Resources, it does this for each jurisdiction and at a national level for the period 2011/12 to 2014/15.<sup>1</sup> It is the third report of this nature prepared by the Australian Energy Market Commission (AEMC).<sup>2</sup>

The prices identified in this report do not represent a forecast of future residential electricity prices. These will be determined by the jurisdictional regulators and market outcomes.

Unless stated otherwise all price references are for a representative residential customer in each jurisdiction.

## Results

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The table in Figure 1 summarises the residential electricity price trends, for all states and territories and nationally, over the period. It is divided into three parts:

- Part A sets out the total price in cents per kilowatt-hour (c/kWh) in the base year (2011/12), the current year (2012/13), the final year of the period (2014/15), and the difference in c/kWh between these years, for each jurisdiction and nationally. It also identifies the total nominal percentage change in price over this period;
- Part B sets out the nominal increase of each cost component from the base year to the final year, expressed as c/kWh; and
- Part C sets out the nominal increase of each cost component from the current year to the final year, expressed as c/kWh.

The retail electricity price movements for Victoria in this table, and report, are based on published standing offers and may therefore overstate the actual prices paid by the majority of customers that are receiving supply on market offers.

<sup>&</sup>lt;sup>1</sup> Therefore this report covers four years of data and price levels to review three years of price changes.

<sup>&</sup>lt;sup>2</sup> The Council of Australian Governments at its 30 April 2009 meeting tasked the then Ministerial Council for Energy (MCE) to provide it with a report detailing possible future trends in residential electricity prices for each state and territory of Australia: see *Communique*, 30 April 2009, viewed 23 January 2013, www.coag.gov. This was prepared by the Commonwealth Department of Resources, Energy and Tourism and provided to the MCE in November 2009. Subsequently the MCE requested that the AEMC prepare two further reports. The first was submitted to the MCE in November 2010 and published in June 2011, with the second published in November 2011. Copies of these reports are available on the AEMC's website www.aemc.gov.au. The standing terms of reference for this report may be viewed in full on the AEMC's website www.aemc.gov.au.

## Comparison of nominal residential electricity prices between 2012/13 and 2014/15

At a jurisdictional level, from 2012/13 until 2014/15 the estimated annual average change for residential retail prices:

• increase by four per cent in Queensland: this equates to a total nominal increase in the regulated price of 2.3 c/kWh over this period. This compares with the total nominal increase of 3.5 c/kWh in the regulated price in 2011/12 to 2012/13. Changes to the distribution network and retail components are the main drivers of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 27.9 c/kWh for this state.

As the modelling underlying this report was completed by late 2012, it does not take account of recent Australian Energy Regulator and Queensland Competition Authority developments. A preliminary assessment of the impact of Australian Energy Regulator's approved changes for feed-in tariffs indicates that from 2013/14 to 2014/15 the distribution network component would increase by 0.5c/kWh to 0.6 c/kWh. This would increase the total estimated retail price for 2013/14 to 27.7 c/kWh (from 27.1 c /kWh), and 2014/15 to 28.5 c/kWh (from 27.9 c/kWh);

- increase by one per cent in New South Wales: this equates to a total nominal increase in the regulated price of 0.5 c/kWh over this period. This compares with the total nominal increase of five c/kWh in the regulated price in 2011/12 to 2012/13. Change in the transmission network component is the main driver of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 31 c/kWh for this state;
- increase by three per cent in the Australian Capital Territory: this equates to a total nominal increase in the regulated price of 1.2 c/kWh over this period. This compares with the total nominal increase of 2.1 c/kWh in the regulated price in 2011/12 to 2012/13. Changes to the distribution network and wholesale energy components are the main drivers of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 20.2 c/kWh for this state;
- decrease by one per cent in South Australia: this equates to a total nominal decrease in the regulated price of 0.4 c/kWh over this period. This compares with the total nominal increase of three c/kWh in the regulated price in 2011/12 to 2012/13. Changes to the distribution network and wholesale energy components are the main drivers of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 33.3 c/kWh for this state.

This outcome does not reflect the recent announcement by the South Australian Government as to the regulated price arrangement reached with AGL and the deregulation of retail electricity (and gas) prices on 1 February 2013;

#### Figure 1 Summary of residential electricity price movements 2011/12 to 2014/15

	National	Queensland (see note 4 below)	New South Wales (see note 5	Australian Capital Territory	Victoria (see notes 3 & 6 below)	South Australia	Tasmania	Western Australia	Northern Territory			
A. Comparison of nominal residential electricity prices bewteen 2011/12 - 2014/15												
Base year (2011/12) price (c/kWh)	25.9	22.1	25.4	16.9	28.8	29.9	26.2	26.2	21.7			
Current year (2012/13) price (c/KWh)	29.6	25.6	30.4	19.1	31.9	33.7	29.2	28.4	23.8			
Final year 2014/15 price (c/kWh)	31.3	27.9	31.0	20.2	35.2	33.3	31.1	29.7	31.8			
Total increase (c/kWh)	5.4	5.8	5.5	3.3	6.5	3.4	4.9	3.5	10.1			
Average annual rate of change from base year	7%	8%	7%	6%	7%	4%	6%	4%	14%			
Average annual rate of change from current year	3%	4%	1%	3%	5%	-1%	3%	2%	16%			
B. Nominal change from base year (2011/12) to final year (2014/15) of each component in c/kWh												
Transmission	0.8	0.2	1.9	0.5	0.1	0.7	1.3	0.7	0.0			
Distribution	2.5	3.4	1.3	1.4	3.3	5.0	2.0	0.4	1.1			
Wholesale	1.4	0.7	2.0	1.5		-2.1	0.8	2.0	8.9			
Retail	0.7	1.5	0.3	0.0	5.0	-0.3	0.8	0.5	0.2			
Total (c/kWh)	5.4	5.8	5.5	3.3	6.5	3.4	4.9	3.5	10.1			
C. Nominal change from current year (2012/13) to final	year (2014/15) of	each component in	c/kWh									
Transmission	0.3	0.1	0.5	0.2	0.1	0.4	0.6	0.6	0.0			
Distribution	1.4	1.9	0.4	1.0	2.4	1.9	0.4	0.9	0.7			
Wholesale	0.0	0.4	-0.2	-0.1		-2.2	0.6	0.0	7.2			
Retail	0.0	-0.1	-0.1	0.0	0.9	-0.5	0.3	-0.2	0.1			
Total (c/kWh)	1.7	2.3	0.5	1.2	3.4	-0.4	1.9	1.3	8.0			

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Retail component values are inclusive of the Victorian wholesale energy component. The grouping of these values for Victoria is indicated by the shaded area.

4. Queensland prices and component values do not incorporate recent pass through approvals by the AER in respect of feed-in tariff costs for 2011/12, or retail price proposals under the QCA's draft retail price determination for 2013/14.

5. New South Wales transmission network component values reflect distribution pricing rather than transmission price rises.

6. Victorian prices shown are based on published standing offers and are likely to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, based on 2011/12 prices, the published standing offers are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh, resulting in an average market offer price of 25.7 c/kWh.

#### How to read this table:

Part A lists the residential retail electricity prices in c/kWh for each jurisdiction and nationally as at the base year (2011/12), the current year (2012/13) and as modelled for the final year of this report (2014/15). It also sets out the average annual rate of change between the base year and the final year, and the current year and the final year.

Part B sets out the nominal change of each component of the retail price, in c/kWh, from the base year to the final year of this report.

Part C sets out the nominal change of each component of the retail price, in c/kWh, from the current year to the final year of this report.

For example, at a national level, the residential electricity price increased nominally by 5.3c/kWh between the **base year** and the final year. The average annual rate of change over this period was seven per cent. By comparison, the annual rate of change between the **current year** and the final year was three per cent.

Of the total price increase of 5.4c/kWh:

0.8c/kWh is attributable to change in the transmission component; 2.5c/kWh is attributable to change in the distribution component;

· 1.3c/kWh is attributable to change in the wholesale component, and 0.7c/kWh is attributable to change in the retail component.

- increase by three per cent in Tasmania: this equates to a total nominal increase in the regulated price of 1.9 c/kWh over this period. This compares with the total nominal increase of three c/kWh in the regulated price in 2011/12 to 2012/13. Changes to the distribution network and wholesale energy components are the main drivers of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 31.1 c/kWh for this state;
- increase by two per cent in Western Australia: this equates to a total nominal increase in the regulated price of 1.3 c/kWh over this period. This compares with the total nominal increase of 2.2 c/kWh in the regulated price in 2011/12 to 2012/13. Change in the wholesale energy component is the main driver of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 29.7 c/kWh for this state;
- increase by 16 per cent in the Northern Territory: this equates to a total nominal increase in the regulated price of eight c/kWh over this period. This compares with the total nominal increase of 2.1 c/kWh in the regulated price in 2011/12 to 2012/13. Change in the wholesale energy component is the main driver of change to the regulated retail price, with the final nominal price in 2014/15 estimated to be 31.8 c/kWh for this state.

The increase in the 2012/13 to 2014/15 period reflects the decision by the Northern Territory Government to increase the regulated retail price by 30 per cent from 1 January 2013; and

• increase by five per cent in Victoria: this equates to a total nominal increase in the standing offer price of 3.4 c/kWh over this period. This compares with the total nominal increase of 3.1 c/kWh in the standing offer price in 2011/12 to 2012/13. Changes to the distribution network and retail and wholesale components are the main drivers of change to the standing offer price, with the final nominal price in 2014/15 estimated to be 35.2 c/kWh for this state.

This outcome is likely to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, the standing offers in that state are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh to an average market offer price of 25.7 c/kWh.

Nationally, the aggregated regulated residential electricity prices increased by 14 per cent in nominal terms from 2011/12 to 2012/13 but, from 2012/13 to 2014/15, the average annual price increases are estimated to moderate to three per cent.<sup>3</sup>

The trends, shown in price per kilowatt-hour (kWh) for a representative residential customer in each jurisdiction and the national average, are presented in Figure 2.

<sup>&</sup>lt;sup>3</sup> The prices referred to in this report are nominal values and have been calculated including a forecast 2.5 per cent year on year general price increase.

Figure 2 Res



c/kWh (nominal)

10.0				
10.0	2011/12	2012/13	2013/14	2014/15
Queensland (see note 1)	22.1	25.6	27.1	27.9
- New South Wales	25.4	30.4	30.0	31.0
Australian Capital Territory	16.9	19.1	19.3	20.2
	28.8	31.9	32.9	35.2
- South Australia	29.9	33.7	31.8	33.3
- Tasmania	26.2	29.2	30.0	31.1
	26.2	28.4	29.2	29.7
- Northern Teritory	21.7	23.8	31.0	31.8
- National	25.9	29.6	30.0	31.3

#### Notes:

1. Queensland prices do not incorporate recent pass through approvals by the AER in respect of feed-in tariff costs for 2011/12, or retail price proposals under the QCA's draft retail price determination for 2013/14. A preliminary assessment of the impact of these changes indicates that the total retail price in 2013/14 would increase by 0.5 c/kWh to 27.7 c/kWh (from 27.1 c /kWh), and in 2014/15 it would increase by 0.5 c/kWh (from 27.9 c/kWh).

2. Victorian prices are based on published standing offers and are likely to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, based on 2011/12 prices, the published standing offers are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh, resulting in an average market offer price of 25.7 c/kWh.

3. Values are nominal (not adjusted for inflation) and exclusive of GST.

4. Numbers may not add due to rounding.

#### Nominal change from the current year for each component

#### Transmission network component

The transmission cost calculations are based on the transmission component of residential network charges, levied by the distribution business on the retailer.

At a jurisdictional level, from 2012/13 to 2014/15, this component is estimated to increase nominally at an average annual rate of:

- two per cent in Victoria and three per cent in Queensland;
- seven per cent in New South Wales, the Australian Capital Territory, South Australia, and Tasmania; and

• 14 per cent in Western Australia.

There is no individual transmission network component in the Northern Territory.

We have estimated that on a national basis, the transmission component has nominally increased by 27 per cent between 2011/12 to 2012/13 for the representative customer. This result has been influenced by Ausgrid's decision to change the structure of network tariffs for customers in its distribution region in that year.<sup>4</sup>

By changing its tariff structure, Ausgrid has changed how it recovers the transmission price through its network tariffs. The consequence of this is that while the underlying transmission costs remain unaffected, the representative customer in Ausgrid's area is now paying a larger proportion of transmission costs compared to the previous year. The overall increase in transmission prices across all consumers is significantly less than 27%.

The nominal annual average growth rate for this component is estimated to be six per cent in the period 2012/13 to 2014/15.

The transmission network component is a small part of the total retail electricity price paid by customers, contributing eight per cent to the aggregated national retail electricity price in 2012/13.

It is estimated that increases in the transmission network component will account for 19 per cent of the national increase in retail residential electricity prices from 2012/13 to 2014/15.

## Distribution network component

Changes in the distribution network component continue to be a driver of retail electricity price increases. This includes the costs of maintaining a reliable supply as well as metering and, in most jurisdictions, the recovery of costs related to solar feed-in tariff schemes.

From 2012/13 to 2014/15 the nominal average annual rate of increase of this component is estimated to be:

- one per cent in New South Wales, two per cent in Tasmania and five per cent in Western Australia;
- seven per cent in South Australia, eight per cent in the Australian Capital Territory and nine per cent in Queensland;
- 12 per cent in Victoria; and
- four per cent in the Northern Territory: this figure is inclusive of any transmission costs as these networks types are not distinguished in this jurisdiction.

Nationally, the aggregated distribution network price is estimated to increase nominally by six per cent annually, from 2012/13 to 2014/15. By comparison, distribution prices rose by 11 per cent from 2011/12 to 2012/13.

<sup>&</sup>lt;sup>4</sup> This change is discussed in more detail in Box 3.4: in section 3.3.3 of this report.

The distribution network component is a large part of the total retail electricity price paid by customers, contributing 37 per cent to the aggregated national retail electricity price in 2012/13.

It is estimated that increases in the distribution network component will account for 81 per cent of the national increase in retail residential electricity prices from 2012/13 to 2014/15.

## Wholesale energy component

Movements in the wholesale energy prices are estimated to moderate in the short term. This component remains largely stable for most jurisdictions with the following exceptions:

- the Northern Territory Government announced a 30 per cent increase to the regulated residential price, effective from 1 January 2013. In this report, this increase has been spread across the wholesale energy and retail components, with the network components limited to an increase in line with the annual allowed price increases. Accordingly from 2012/13 to 2014/15 the nominal average annual rate of increase of this component is estimated to be 21 per cent;
- the South Australian Government announced its decision to deregulate electricity prices from 1 February 2013, and also that they had reached an agreement with AGL to reduce regulated retail prices for eligible customers by 9.1 per cent. These announcements were made subsequent to the completion of the modelling for this report and have therefore not been included.

From 2012/13 to 2014/15 the nominal average annual rate of decrease of this component is estimated to decrease at a rate of 11 per cent per year. This outcome is based on Frontier's modelling and previous decisions of the South Australian regulator to the change from setting the wholesale energy allowance of the regulated tariff on the basis of a long term estimate of prices to a market based price for wholesale energy. It reflects the fact that recently, wholesale spot prices have been well below the long term estimate of wholesale prices, based on the cost of new entrant generation.

Nationally, the wholesale energy component rose by 14 per cent from 2011/12 to 2012/13, in part reflecting the introduction of the carbon price. From 2012/13 to 2014/15 the nominal average annual increases of this component are estimated to be immaterial.

The wholesale energy component is a large part of the total retail electricity price paid by customers, contributing 37 per cent to the aggregated national retail electricity price in 2012/13. This estimate does not include the estimation of this component for Victoria, which was combined with the retail component for that state.

It is estimated that increases in the wholesale energy component will account for one per cent of the national increase in retail residential electricity prices from 2012/13 to 2014/15.

## Retail component

From 2012/13 to 2014/15 the nominal average rate of change for this component is estimated to be:

- a decrease of one per cent in Queensland, two per cent in Western Australia and New South Wales and five per cent in South Australia;
- immaterial in the Australian Capital Territory;
- an increase of four per cent in Tasmania; and
- an increase of 21 per cent in the Northern Territory. This reflects the impact of the announced 30 per cent increase in the regulated retail price from 1 January 2013, discussed above under the wholesale energy price.

From 2012/13 to 2014/15 the combined wholesale and retail component in Victoria is estimated to increase by two per cent per year, on average.

From 2011/12 to 2012/13 this component, which includes the various retail environmental scheme obligations, increased nationally by 17 per cent. It is estimated that changes in the retail component will have an immaterial impact on the national retail residential electricity prices from 2012/13 to 2014/15.

The retail component contributes 17 per cent to the aggregated national retail electricity price in 2012/13, noting that this figure incorporates the wholesale energy component for Victoria.

## Drivers of changes in residential electricity prices

While there may be variation from jurisdiction to jurisdiction, it is estimated that from 2012/13 nationally the network price will increase and the wholesale price will remain fairly flat.

This report highlights three primary drivers of this trend. They are:

- increases in the network components;
- moderating wholesale prices; and
- moderating retail environmental scheme prices.

### Increases in the network components

Network costs are made up of transmission and distribution use of system charges. These are usually combined by distributors into a single network price to retailers. This price is then passed through to customers as part of the electricity price.

Network revenue or average prices for network service providers are set in regulatory determinations by the relevant regulator. Network average prices or revenues are then locked in for the duration of the regulatory control period, usually a period of five years, for each network.

The determinations necessarily reflect the market conditions, forecasts and requirements relevant at the time they are made. The oldest currently operating regulatory determination is ElectraNet's, which covers the period 1 July 2008 – 30 June 2013. This means that the assumptions inherent in the current ElectraNet

regulatory determination were those held prior to 1 July 2008. A number of these assumptions were behind increases in network costs for the current regulatory control period.

Examples of these assumptions relate to:

- the rate of return for a network business;
- capital expenditure for meeting peak demand and asset replacement; and
- operating costs and capital unit costs.

Beyond the current regulatory control period the AEMC has assumed that network prices for the next determination period in each jurisdiction will continue on trend or increase by the Consumer Price Index. Average prices or revenue will be determined by the relevant regulator at the time of the next regulatory determination and is likely to differ from the AEMC's assumptions.

## Moderating wholesale prices

In recent years demand at a national level has slowed from an annual average growth rate of 2.8 per cent (1990/91 to 2006/07) to one per cent (2006/07 to 2010/11). Some of the drivers for this are:

- the change in consumer behaviour in response to rising electricity prices;
- the adoption of energy efficiency activities; and
- the effect of the stronger Australian dollar on the local industrial and manufacturing sectors.<sup>5</sup>

Generation capacity has also been increasing, with capacity growing in the National Electricity Market from 47,418 megawatts (MW) in 2009 to 48,311 MW in 2012. In part this growth is linked to the investment in renewable generation on the back of government environmental policies. In Australia, from 2009 to 2011, the installed capacity of large scale renewable energy generation increased by 40 per cent.

The combination of an expansion of supply and slowing demand would be expected to put downward pressure on wholesale prices. Wholesale spot market prices have recently been well below the long run marginal cost of generation. Frontier Economics undertook the wholesale market modelling for this report at the request of the AEMC and their modelling indicates that wholesale energy prices are not expected to recover significantly before 2014/15.

The incorporation of the carbon price into the wholesale energy price from 1 July 2012 led to an initial step increase in this component but is not expected to further materially change it for the remainder of the period covered by this report.

Moderating retail environmental scheme prices

Costs associated with jurisdictional environmental schemes, in particular the various feed-in tariff schemes continue to have impacts on the retail price as the final costs of these schemes are passed through to consumers.

<sup>&</sup>lt;sup>5</sup> Australian Energy Market Operator, 2011 Electricity statement of opportunities update, 2 March 2012, at page 2.

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In 2011/12 to 2012/13 nationally the price for these schemes for a representative customer went from 1.5 c/kWh to 4.1 c/kWh, an increase of 181 per cent, reflecting in part the escalation in the price of the recovery of feed-in-tariffs.

The total cost of the current schemes is modelled to remain flat until 2014/15.

Costs under the Large scale Renewable Energy Target are projected to continue to increase generally over the projection period for all states, as the overall target increases.

Conversely costs under the Small scale Renewable Energy Scheme are projected to decrease after 2013/14 as the solar credits multiplier is phased out on 1 January 2013 and the high feed-in tariffs close to new applicants or move to a lower rate across jurisdictions.

## Factors that could affect price trends over the modelled period

Estimates of price trends in this report are based on inputs from jurisdictional governments and (jurisdictional and national) regulators, as well as modelling undertaken by Frontier. The underlying assumptions of these inputs are subject to a number of uncertainties that may result in actual price trends differing from those in this report. These include:

- The rate of entry and exit from the generation market. In recent years there has been high levels of investment in renewable generation while at the same time there have been a number of coal power plants that have, temporarily or permanently, ceased operation. Wholesale energy prices are a result of the interaction between demand and supply. If supply tightens then prices would be expected to rise.
- Changes in the cost allowances in regulatory determinations for transmission and distribution network providers, commencing from 1 July 2013. Changes in revenue or weighted average prices will occur over time as each network starts a new regulatory control period.
- Changes in the growth rate for demand: if demand is lower than forecast in network regulatory determinations then network prices, in particular for revenue capped network businesses, are likely to rise quicker than outlined in this report. This is because the total revenue allowance is set for a five year period. Prices are based on forecasted consumption and are set to meet the allowed revenue. If the actual consumption volumes fall, then the business will increase the price per kWh to maintain its revenue at the allowed level. For businesses regulated under a weighted average price cap, the fall in consumption will also lead to a fall in revenue, subject to the businesses' ability to re-balance their tariffs.<sup>6</sup>

<sup>&</sup>lt;sup>6</sup> At the time of this report the following networks are subject to a revenue cap: all transmission networks in the National Electricity Market, Western Power (Western Australian transmission and distribution), Ergon Energy and Energex (Queensland distribution), ActewAGL (Australian Capital Territory distribution) and Aurora Energy (Tasmania distribution). The remaining distribution networks are subject to weighted average price caps: Ausgrid, Endeavour Energy and Essential

- Recent or proposed changes by some jurisdictional regulators as to their approach to estimating wholesale energy costs. This includes Queensland, New South Wales and Tasmania.
- Changes to the input cost for generators, in particular gas and coal prices in Australia and internationally.
- Recent proposed changes by the Tasmania Government to the electricity industry in Tasmania.
- Changes in the carbon dioxide emissions intensity per megawatt-hour: there has been some indication that emissions intensity in the National Electricity Market has declined in the period since the introduction of the carbon price.<sup>7</sup> A lower carbon dioxide emissions intensity factor will reduce the carbon price paid by the customer per kilowatt-hour.
- The price outcomes from the South Australian Government's decision to remove retail price regulation from 1 February 2013.

## Methodology

The residential electricity prices in this report:

- assume a given level of consumption for each jurisdiction based on data provided by the jurisdiction;
- are based on an average price and are not divided into fixed and variable components;
- are based on jurisdictional and regulator data where available; and
- are based on standing offer and regulated prices: this is likely to overstate the price paid by a customer receiving electricity supply under a market offer.

The AEMC's models are available on the AEMC website. Further information on the methodology used in this report is available in chapter 4.

Energy (New South Wales), SP AusNet, Powercor, CitiPower, Jemena and United Energy (Victoria), ElectraNet (South Australia), and Power and Water Corporation (Northern Territory).

7 Clean Energy Future fact sheet - *Emissions in the national electricity market*, http://www.cleanenergyfuture.gov.au, viewed 18 February 2013.

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## 1 Introduction

## 1.1 Purpose of this report

Retail electricity prices have been the focus of much public concern, particularly in relation to the impact of recent price rises on the costs of living, and whether the final price being paid by consumers reflects an efficient price.

These concerns have generated much commentary and prompted a number of recent reviews of electricity prices and, more broadly, the electricity sector in general, both at jurisdictional and national levels.<sup>8</sup>

A common understanding of the components of retail electricity prices, and what drives changes in each component of the overall price paid by consumers, is an important foundation of this conversation.

This report has been prepared under terms of reference from the Standing Council on Energy and Resources (SCER). The purpose of this report is to provide information on possible future residential electricity price movements and the drivers of those movements. It provides an indication of possible future trends in retail residential electricity prices,<sup>9</sup> and identifies the main factors influencing those trends, over the three years from 1 July 2012 to 30 June 2015 (2012/13 - 2014/15) as compared to the base year of 1 July 2011 to 30 June 2012 (2011/12). These trends are established for each jurisdiction in Australia individually and at a national level.

## 1.2 Terms of reference and scope

This is the third report of this nature prepared by the AEMC at the request of SCER.<sup>10</sup>

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<sup>&</sup>lt;sup>8</sup> Examples in 2012 include: the Commonwealth Senate Select Committee on Electricity Prices, established in August to inquire into, amongst other things, the causes of recent price increases. The report is available from www.aph.gov.au. In May the Queensland Government announced the establishment of an Independent Review Panel to review and oversee the reform of power delivery by government owned electricity entities operating in Queensland. A final report is to be delivered to the Queensland Government in January 2013. In June 2012 the Essential Services Commission of South Australia initiated an investigation of the wholesale electricity component of the standing contract price, although this review was suspended in December, following some changes in South Australian Government energy policy.

<sup>&</sup>lt;sup>9</sup> For Western Australia and the Northern Territory, future trends in the costs necessary to supply electricity.

<sup>10</sup> The Council of Australian Governments at its 30 April 2009 meeting tasked the then Ministerial Council for Energy (MCE) to provide it with three reports detailing possible future trends in residential electricity prices for each state and territory of Australia: see *Communique*, 30 April 2009, viewed 23 January 2013, www.coag.gov. The first report was undertaken by the Commonwealth Department of Resources, Energy and Tourism and provided to the MCE in November 2009. Subsequently the MCE requested that the AEMC prepare the last two reports. The first of the two remaining reports was submitted to the MCE in November 2010 and published in June 2011, with the second published in November 2011. Copies of these reports are available on the AEMC's website www.aemc.gov.au. The current standing terms of reference may be viewed in full on the AEMC's website www.aemc.gov.au.

The terms of reference direct the AEMC to focus its analysis on the possible future retail electricity prices over the period from 2011/12 to 2014/15, and the factors that affect those prices and the possible future trends, for a representative set of residential customers in each state and territory.

This report focuses on single rate, regulated or standing prices offered by retailers in each jurisdiction. As the residential customer category is often combined with other categories of small customers for the purposes of offers, references to residential customers in this report may also incorporate other categories of small customers, such as small business customers.<sup>11</sup>

In accordance with the terms of reference, prices in this report:

- are indicative of the prices paid by a representative set of residential customers;
- are based as far as possible on current regulatory determinations;
- are broken down into relevant price components, including individual scheme allowances;
- are expressed in nominal terms; that is, they are not adjusted to take inflation into account; and
- are expressed in cents per kilowatt hour (c/kWh)

Using 2011/12 as the base year, price movements have been modelled to 2014/15, with analysis presented by jurisdiction as well as on a national basis. All prices in this report are exclusive of the Goods and Services Tax (GST).

The possible future price outcomes presented in this report are not price forecasts. They should be treated as providing information as to possible retail pricing trends, based on current knowledge and assumptions.

The estimations of retail electricity price movements in this report are based on standing or regulated offers, which tend to overstate the actual prices paid by customers that are receiving supply on market offers. In addition, the drivers for market offers may be the same as those for standing or regulated offers, but there is no guarantee that the former will change in line with trends identified in this report for the latter.

## 1.3 Structure of this report

The remainder of this report is structured as follows:

- Chapter 2 sets out, at a high level, some context to understanding supply and demand side factors that influence electricity prices in Australia. It also identifies key drivers in price trends and outlines the AEMC's assumptions with respect to those drivers.
- Chapter 3 contains summaries of the results of our analysis for each jurisdiction, based as closely as possible on the approach taken by that jurisdiction's regulator

<sup>&</sup>lt;sup>11</sup> These categories are generally defined by levels of annual electricity consumption at the specified premises.

in determining the retail electricity price. These results are also aggregated to reflect a national summary. This chapter also includes a note regarding the comparison of prices across jurisdictions.

- Chapter 4 outlines the general approach taken by the AEMC in its analysis of the drivers of retail electricity price movements, as well as setting out some of the factors to consider when reading and using this report. It also provides some background on electricity markets in Australia.
- Appendix A provides, for reference, high level summaries of the electricity markets in Australia: the National Electricity Market (NEM), the Western Australian South Western Interconnected System (SWIS), and the Northern Territory market.
- Appendix B provides additional information relating to network prices in New South Wales.
- Appendix C contains a summary of results of additional modelling undertaken for some jurisdictions based on alternative methodologies for estimating the wholesale energy component under different scenarios.

The pricing model developed by the AEMC, which underpins this report, is available on the AEMC website.<sup>12</sup>

Frontier Economics (Frontier) was engaged to model the costs of wholesale energy, carbon and environmental scheme costs. Frontier's report is also available on the AEMC website.<sup>13</sup>

<sup>12</sup> www.aemc.gov.au.

<sup>13</sup> Ibid.

# 2 Background

This chapter sets out the factors affecting the components of the representative customer's price. It also describes the AEMC's modelling approach for each of these factors.

## 2.1 Factors influencing the network cost component

## 2.1.1 Regulatory determination framework

In the NEM, the setting of regulated network prices is governed by the National Electricity Law (NEL) and the National Electricity Rules (NER). The timelines, regulatory processes and principles governing the setting of network prices are set out in chapters 6A (for transmission) and 6 (for distribution) of the NER.

Responsibility for the economic regulation of the transmission networks in the NEM transferred from the Australian Competition and Consumer Commission to the Australian Energy Regulator (AER) in 2005. Similarly, responsibility for the economic regulation of the distribution networks transferred from state and territory regulators in 2008.<sup>14</sup>

Once a determination has been finalised by the AER a network business may, within a specified time period, lodge an application for a limited merits review of the determination to the Australian Competition Tribunal (Tribunal). If successful, the final determination may be varied, in which case the post appeal outcome will be locked in for the remainder of the regulatory control period.

Generally, once the regulator has made a final determination for a transmission or distribution network business the trajectory for prices or revenue for that business is fixed subject to some predetermined variants. The ability to re-open a regulatory determination is limited to specific circumstances in order to provide investment certainty and regulatory accountability.

The Economic Regulation Authority (ERA) is the regulator in Western Australia. The framework for network regulation in Western Australia is the Electricity Networks Access Code 2004.

In the Northern Territory network prices are set by the Utilities Commission, pursuant to Part 3 of the Electricity Networks (Third Party Access) Code.

## 2.1.2 Current regulatory determinations

Regulatory control periods are typically five years. The reset of regulatory control periods are staggered across time. This can be seen in Figure 2.1.

The analysis, assumptions and forecasts made prior to the current regulatory control period are relevant to understanding the network prices currently being charged, as they drive the approved revenues. For example, ElectraNet's current transmission

<sup>&</sup>lt;sup>14</sup> Australian Energy Regulator, www.aer.gov.au, *Our role in networks*, 19 February 2013.

determination commenced on 1 July 2008 and will end on 30 June 2013. The forecasts incorporated in the determination were undertaken in June 2007.

These expectations are reflected in the expenditure forecasts in the current regulatory control period, in particular in their capital requirements as identified at the time of the regulatory determination. Some of these expectations were:

- ageing assets and infrastructure requiring high levels of capital expenditure for replacement and reinforcement (New South Wales, Victoria, South Australia);
- the imposition of higher reliability or bush-fire standards (New South Wales, Queensland, Victoria, South Australia, Australian Capital Territory);<sup>15</sup>
- rising population and demand (Queensland); and
- increasing peak demand (New South Wales, South Australia).

The general trend across most jurisdictions was for forecast capital expenditure to increase in the current regulatory control period. By contrast, the most recent determinations for Aurora Energy (Tasmanian distribution network) and Powerlink (Queensland transmission network), both of which began on 1 July 2012, have determinations with capital expenditure requirements that reflect a moderation in forecast demand growth.<sup>16</sup>

Generally network operating expenditure in the current regulatory control periods was forecast to rise, with the extent of the increase dependent on individual network operating environments. Again, the more recent determinations have reflected more moderate forecasts for demand and input costs for labour and materials.<sup>17</sup>

<sup>&</sup>lt;sup>15</sup> The AEMC is currently undertaking a review of the different network reliability standards in the NEM under terms of reference received from the Standing Council of Energy and Resources. This review is focussed on the merits of moving to a nationally consistent framework from distribution reliability standards. The draft report was published in November 2012. Papers may be accessed from the AEMC's website www.aemc.gov.au.

<sup>&</sup>lt;sup>16</sup> Australian Energy Regulator, *State of the energy market 2012*, at page 70.

<sup>&</sup>lt;sup>17</sup> Australian Energy Regulator, *State of the energy market 2012*, at page 71.

	(Financial Years)	2008	2009	2010	20	011	2012	2013	2014	20	015	2016	2017
Queensland	Powerlink Energex Ergon Energy			18.20 29.61		11.04 7.50	- 11.04 7.50	3.02 11.04 7.50	3.02 1.42 1.87		3.02	3.02	
New South Wales	TransGrid AusGrid (Trans) AusGrid (Dist) Endeavour Energy Essential Energy		- 7.7 17.8 12.5 13.4	5.61 7 18.46 5 18.18 8 13.00 1 17.90		5.61 18.46 18.18 13.00 17.90	5.61 18.46 18.18 0.15 14.75	5.61 2.02 0.77 1.72 3.99					
ACT	TransGrid ActewAGL		13.8	5.61 2 4.00		5.61 4.00	5.61 5.41	5.61 5.41					
Victoria	SP AusNet (Trans) CitiPower Jemena Powercor SP AusNet (Dist) United Energy	12.55	1.01	1.01	1.01 - 6.41 4.99 0.11 9.99 0.37		1.01 4.00 3.00 3.00 4.00 1.00	1.01 6.78 7.97 6.30 5.22 5.97	7.80 7.50 6.90 6.10 10.00	7.80 3.40 7.40 6.10 10.00			
South Australia	ElectraNet SA Power Networks*		4.8	9 4.89 12.14		4.89 18.10	4.89 7.00	7.00	0.89				
Tasmania	Transend Aurora Energy			5.53		5.53	5.53 4.56	5.53	- 1.50	,	- 1.50	- 1.50	

#### Figure 2.1 Current network regulatory control periods in the NEM: commencement and expiry

Source:

Australian Energy Regulator

Notes:

The X factor is a mechanism used to smooth the revenue trajectory across a regulatory control period. Note that in this table, positive values indicate real price increases under the relevant determination (these would usually be shown as

negative values under the CPI-X formula applied by the AER).

All regulatory control periods run from 1 July in a given year for a five year period, terminating on 30 June of the final year, except for Victoria: the transmission network regulatory determination runs from 1 April 2008 through until 31 March 2014; the distribution network regulatory determinations run on a five year calendar basis.

\* Previously known as ETSA Utilities

Current transmission network regulatory control period

Current distribution network regulatory control period

Current projection period of this report (including base year)

Once capital expenditure is entered into the regulatory asset base it, with limited exceptions, is fixed and must be recovered over time through network charges passed through to the customer. This means that a material portion of current network prices reflects past expenditure. Therefore, changes in capital expenditure will take some time before they are fully reflected in customers' prices.

In Australia transmission network businesses charge the distribution network businesses, and any directly connected customers, a transmission price. Distribution network businesses charge the retailer a combined network price, covering the transmission cost and distribution price, for each customer. The retailer then recovers the network price from customers.

## 2.1.3 New regulatory control periods commence during the report

There are a number of network businesses whose current regulatory control period expires and a new regulatory control period commences during the period covered by this report.

The networks with new regulatory control periods within the period covered by this report are:

- ElectraNet (South Australian transmission network) commences 1 July 2013;
- SP AusNet (Victorian transmission network) commences 1 April 2014;
- ActewAGL (Australian Capital Territory distribution network) commences 1 July 2014;
- Ausgrid (New South Wales distribution network) commences 1 July 2014;
- Endeavour Energy (New South Wales distribution network) commences 1 July 2014;
- Essential Energy (New South Wales distribution network) commences 1 July 2014;
- TransGrid (New South Wales and Australian Capital Territory transmission network) commences 1 July 2014; and
- Transend (Tasmanian transmission network) commences 1 July 2014.

In the absence of an accurate forecast of network prices at the end of the current regulatory control period, the AEMC has conservatively assumed that pricing trends that operate in the final year of the current pricing period will continue into the next price control period.

The exception is for the New South Wales distribution businesses where, because of revenue changes as a result of successful appeals to the Australian Competition Tribunal and the operation of pricing principles, they have a moderation in prices in the final year of the current regulatory control period to help smooth the transition into the next regulatory control period. For New South Wales distribution businesses the AEMC has assumed that prices in 2014/15 will increase by inflation.

Continuation of the final year trend may be overstating the expected growth in prices. As noted for Aurora and Powerlink there was moderation in the capital and operating expenditure requirements which led to a reduction in the annual price change allowed in the current regulatory control period.

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There are also a number of other factors that drive network prices that may have changed between the current and forthcoming regulatory control period, making it difficult to predict regulatory determination outcomes. Differences between the AEMC's assumptions and the outcomes of regulatory determinations will affect network price trends.

## 2.2 Factors influencing the network component price

## 2.2.1 Peak demand growth

Peak demand represents the highest level of demand on a section of network or generation plant within a defined time period.

The decision to invest to expand the capacity of a network asset is strongly influenced by the need to ensure it can accommodate peak demand without compromising network reliability, security or safety standards and obligations.

While there may be a difference between the peak on an individual asset and the network peak, on average, it would be expected that there would be a relationship between rates of growth in network peak demand and rates of capital expenditure on individual assets to expand capacity.

Figure 2.2 is based on data collated by the AER, and shows the peak demand trend in the NEM from 1998/99 to 2011/12.



## Figure 2.2 NEM summer peak demand

Source: Australian Energy Regulator website www.aer.gov.au

Figure 2.2 shows a general rise in summer peak demand in the NEM from 1998/99 until 2010/11, then a fall in levels between 2010/11 and 2011/12. It is too early to determine whether this fall represents a unique event or is part of a trend.

Recent forecasts published by the Australian Energy Market Operator (AEMO) forecast that peak demand will slow but will continue to grow.<sup>18</sup>

At the time of the regulatory determinations for many of the network businesses growth in peak demand was a driver of investment in both peaking generators and additional capacity in transmission and distribution networks as service providers invested to ensure, amongst other things, continued security and reliability of supply during peak periods.

<sup>18</sup> Australian Energy Market Operator, National Electricity Forecasting report, June 2012, at page i.

A large driver of the level of residential demand at any point in time is the use of air conditioners. As would be expected, hotter days see increased use of air conditioners and, as a result, an increase in the demand for electricity. The peak of the system demand is generally consistent with hot days in summer. The number and duration of high temperature periods in summer will have an effect on overall demand. This affect becomes greater as the installation of air conditioning in households expands. A milder summer would be expected to see a lower demand and a lower system peak.

The number and duration of hot summers in certain states will affect the annual rate of change in peak demand.

The Frontier modelling done for the AEMC was based on the peak demand as forecast by AEMO in the 2012 National Transmission Network Development Plan (NTNDP). To the extent that actual demand is higher or lower than peak demand as forecast by AEMO then the price trend experienced by customers will differ from those modelled by the AEMC.

## 2.2.2 Electricity consumption and prices

In Australia there are broadly two different forms of regulatory price controls for regulated networks, the revenue cap and the weighted average price cap.

Under a weighted average price cap the revenue to be recovered is calculated at the time of the regulatory determination. This is converted to a weighted average price primarily using electricity consumption data. Revenue for the business will then rise and fall with the difference between the estimated electricity consumption and actual electricity consumed by customers. The strength of the relationship between electricity consumption and revenue is also affected by adjustments made by the business to its price structure.

Under a revenue cap the revenue to be recovered is also calculated at the time of the regulatory determination. Unlike a weighted average price cap, in each year of the regulatory control period the business converts its revenue into prices using forecast electricity volumes. If the forecast revenue is different from allowed revenue, usually because actual electricity consumption was different to forecast consumption, then the revenue difference is recovered or paid back by adjustments to prices in subsequent years.

For a given level of required revenue, variations in electricity consumption will inversely affect the price per unit (for residential customers the price per kWh). Under a revenue cap the price will change in the following year.

Under a regulatory determination, the effect of changes in consumption on capital and operating expenditure will affect whether the residential network price changes by more or less than the change in electricity consumption.

This means the price per kWh for a typical residential customer would be expected to rise where the revenue required by network businesses falls more slowly than electricity consumption. This would lead to a rise in the price for the typical customer.

How an individual customer's bill changes would be a function of their personal electricity consumption patterns.

# 2.2.3 Availability of infrastructure to connect supply from generators to load centres

Most of the existing transmission network infrastructure has been developed to service the transport requirements of traditional fossil or hydro fuel generators to load centres. To the extent that renewable generation technologies are located in areas that are remote from the existing network and load centres, there will be additional costs to build new network infrastructure.

There is an implicit assumption about the extent of remote generation in the prices for the current regulatory control periods. To the extent that this is expected to change at the time of the next regulatory determination then network prices would differ from those modelled by the AEMC.

# 2.2.4 The need to meet changes to design planning criteria and/or reliability standards

Reliability refers to the extent to which customers have a continuous supply of electricity. As electricity cannot be easily stored, a reliable supply of electricity requires generators to produce electricity and the transmission and distribution networks to transport the electricity to customers in real time. As a result, a reliable supply of electricity to customers requires adequate planning, capacity, and maintenance on all components of the electricity supply chain to ensure electricity can be delivered to customers when it is required.

Each state and territory government retains control over how transmission and distribution reliability is regulated, which has resulted in different approaches in each jurisdiction.

Previously some state governments changed the reliability standards of the electricity network businesses leading to an increase in capital expenditure. This capital expenditure is captured in the current required revenue of the relevant network businesses.

Further changes in reliability requirements may result in changes to capital and operating expenditure and as a result change the price customers pay for network services.

## 2.2.5 Population growth and residential construction

As new suburbs are developed, existing distribution networks must be extended to provide supply to these areas. The rate of new house construction has a direct effect on the amount of capital expenditure required by distribution businesses. In some cases, the owner of the development contributes to the cost of this connection expenditure by the network. The connection of new housing developments also could result in the need for additional augmentation to be undertaken in other parts of the network.

The rate of new housing construction, and the expected rate of housing construction, will therefore have a direct effect on the level of capital expenditure of distribution businesses.

Changes in new housing construction may have a mild effect on network prices in the short term as the connection includes long lived assets, the cost of which is recovered over the life of the asset.

## 2.2.6 Changes to the network regulation rules

On 29 November 2012, the AEMC made a more preferable rule following its consideration of the economic regulation of network service providers rule change request. The AEMC's preferred rule made changes to the following aspects of the regulation of electricity networks:

- calculation of the rate of return;
- capital expenditure incentives;
- capital expenditure and operating expenditure allowances; and
- the regulatory process.

All reviews undertaken from the current year to the end of the period included in this report are covered by the transitional arrangements associated with this rule change. In the case of ElectraNet and SP AusNet transmission, the new determination that covers the period of this report are made using the rule framework as it existed prior to the new rule coming into effect.

The new rules may affect the outcomes of network regulatory determinations in future regulatory control periods, and customer prices, made subsequent to their commencement.

## 2.2.7 Feed-in tariffs

The rapid uptake of rooftop solar generation experienced in the NEM in recent years has had an impact on costs for several distribution businesses. AEMO has reported that, the total solar capacity in the NEM has risen from 23 MW in 2008 to an estimated 1,450 MW at the end of February 2012.<sup>19</sup>

This rapid uptake has led to applications by several distribution networks for the recovery of higher than expected costs associated with the implementation of jurisdictional feed-in tariff schemes. These have often been relatively substantial recoveries:

- In New South Wales the costs are being recovered through the Climate Change Fund, which is levied on distribution customers. This makes it difficult to identify the impact of the New South Wales Solar Bonus Scheme alone, as the fund is used to recover the costs of other projects and is set through the New South Wales budgetary process. The Independent Pricing and Regulatory Tribunal (IPART) noted that the levy was increased to recover an additional \$100 million in 2012/13, and will be increased by a further \$150 million annually from 2013/14 through until 2016/17.<sup>20</sup>
- The AER has approved applications for the recovery of costs incurred in 2011/12 made by ActewAGL (Australian Capital Territory) for the amount of \$0.7 million,

<sup>&</sup>lt;sup>19</sup> Australian Energy Market Operator, *Rooftop PV information paper 2012*, at page iii.

<sup>&</sup>lt;sup>20</sup> Independent Pricing and Regulatory Tribunal, *Changes in regulated electricity retail prices from 1 July 2012,* at page 20.

and Ergon and Energex (Queensland) for \$27.8 million and \$78.6 million respectively.  $^{21}$ 

• SA Power Networks (South Australia) elected to recover its previously under-recovered feed-in tariff payments under the jurisdictional scheme amounts provisions of the NER.<sup>22</sup>

Recoveries under these schemes are expected to smooth out following these initial step increases.

In many jurisdictions, governments have reduced the feed-in price associated with solar bonus schemes. This has reduced the attractiveness of these schemes and is expected to reduce their uptake. The uncertainty surrounding the level of uptake of these schemes means there is uncertainty surrounding the cost recovery for the schemes and the price to customers.

For New South Wales, Queensland and Victoria the historic feed-in tariff values in the AEMC's modelling were provided by the AER. The forecast values were derived in several different ways based on available information:

- in New South Wales the AEMC modelled the climate change fund as a proxy for feed-in prices. The historic values were escalated in line with the revenue forecasts as provided by the department of water and energy;
- in the Australian Capital Territory the future feed-in tariffs were modelled by applying the proportion of feed-in tariff revenue as a proportion of distribution network revenue to the distribution network price per kWh;
- in SA the values were provided by SA Energy Networks. In Queensland they were provided by the AER; and
- in Victoria the 2012/13 values were adjusted for forecast inflation.

If the amount of revenue or price to be recovered is higher or lower than those utilised by the AEMC to forecast feed-in prices then the total price to customers will be higher or lower.

## 2.3 Factors affecting the wholesale energy component price

In Australia, the generation of electricity is not price regulated. There are market limits on price in the form of the market price cap and the cumulative price threshold.

For customers on market contracts the price paid for generation is determined by competition in the wholesale and retail markets. For customers on regulated prices, the state based regulator determines the price for wholesale energy that the retailer is allowed to recover, usually referred to as the wholesale energy allowance. Generally this allowance is set for a single regulatory year.

<sup>21</sup> All figures in current year dollars. Australian Energy Regulator, Pass-through application for Queensland solar bonus scheme 2011/12, Ergon Energy Determination, January 2013; Pass-through application for Queensland solar bonus scheme 2011/12, Energex Determination, January 2013.

<sup>&</sup>lt;sup>22</sup> Australian Energy Regulator, *ETSA Utilities application for revocation and substitution of 2010/11 to 2014/15 distribution determination - Feed-in tariff payments,* Determination, February 2012.

The SCER's terms of reference requires the AEMC report to cover the period of 2011/12 to 2014/15. The AEMC engaged Frontier to model electricity wholesale prices for NEM jurisdictions and Western Australia for the period of 2012/13 to 2014/15.

Frontier Economics used its market models to produce an estimate of future trends in generation prices. Frontier used publicly available information from AEMO, the Western Australian Independent Market Operator (IMO) and the Commonwealth Bureau of Resource and Energy Economics (BREE) as inputs to its modelling. Frontier's modelling report is available on the AEMC's website.

## 2.3.1 Slowing demand growth

Figure 2.3 shows total electricity consumption in Australia from 1990 to 2011. It shows that while electricity consumption in Western Australia continues to increase, growth in average annual electricity consumption in the NEM fell in 2010 / 2011. Consumption in the Northern Territory has increased by around 60 per cent since 1990/91, but the total remains below that of other jurisdictions due to its relatively small population.



Figure 2.3 Australian electricity consumption 1990-2011

Source: Bureau of Resources and Energy Economics, 2012 Australian energy statistics data, Table I.

AEMO forecast that NEM wide demand will fall by 2.4 per cent in 2012/13 and will remain flat in 2013/14.<sup>23</sup> In Western Australia, the IMO project average demand growth of 2.1 per cent.<sup>24</sup> It is these forecasts that are used in Frontier's modelling of the wholesale electricity price.

There are a number of factors that are contributing to the reduction in consumption nationally. AEMO outlines the following:

• changes in the economic outlook. Reduced energy forecasts are consistent with a moderation in gross domestic product, especially in the short term;

<sup>&</sup>lt;sup>23</sup> Australian Energy Market Operator, *National Electricity Forecasting Report*, 2012, at page v.

<sup>&</sup>lt;sup>24</sup> Independent Market Operator, *Statement of Opportunities*, June 2012, at page 3.

- reduced manufacturing consumption in response to the high Australian dollar. An expected increase in cheaper imports is anticipated to impact domestic manufacturing growth;
- significant penetration of rooftop solar systems.<sup>25</sup> The impact of rooftop solar installations is expected to partially offset the need for increased electricity generation. By 2021/22, this is forecast to increase to 7,558 gigawatt-hours (GWh) or 3.4 per cent of annual energy;<sup>26</sup> and
- consumer response, commercial and residential, to rising electricity costs and energy efficiency measures.<sup>27</sup>

Historically, the exact relationship between the price of electricity and the level of customer demand, 'the elasticity of demand', has been difficult to precisely quantify. It is to be expected that with increases in the cost of electricity, customers will look for, and find, ways to manage their demand. Changes in demand are likely to remain 'inelastic' in the short run, that is, the per cent drop in consumption is likely to be less than the per cent increase in price.

Prices in the wholesale electricity market are determined by the interaction of supply (generation) and demand (consumption). Where demand is falling it would be expected that prices would fall until either demand picks up or generators reduce supply.

If actual demand varies from the modelled demand in this report, it would be expected that this would directly affect the trend in wholesale prices.

## 2.3.2 Entry and exit of generators from the wholesale electricity market

A prudent generator makes an investment based on its expectation of return on investment. One of the key factors in its consideration of return is the expectation of future prices. Prices are heavily influenced by the interaction of demand and supply.

In a market with falling or low demand, all other factors being the same, it would be expected that generators would slow or delay investment compared to a growing market.

If the generator expects that prices will fall, or remain below the variable costs for a particular plant and remain there for a sustained period of time, it would be expected that the generator will, temporarily or permanently, close that plant.

Generators earn revenue from the spot market, contract market and hedging market. In the case of renewable generators they also derive revenue from issuing large scale generation certificates under the Large scale Renewable Energy Target (LRET) scheme.

The LRET scheme creates a financial incentive for the establishment and growth of renewable energy power stations, such as wind and solar farms, or hydro-electric power stations. It does this by requiring retailers to purchase certificates produced by eligible renewable generators in order to meet an annual target or to pay a penalty for any shortfall.

<sup>&</sup>lt;sup>25</sup> South Australia has the highest penetration of rooftop solar systems of all the NEM states.

<sup>&</sup>lt;sup>26</sup> Australian Energy Market Operator, *National Electricity Forecasting Report*, 2012, at page v.

<sup>&</sup>lt;sup>27</sup> Australian Energy Market Operator, *National electricity forecasting report*, 2012, at page v.

Currently electricity prices in the spot market prices are well below the current estimate of the cost of efficient new generator entry as measured by the long run marginal cost.<sup>28</sup>

There have been announced generation plant closures. The owners of the following plant have announced changes to their operation patterns (the capacity withdrawn is specified in brackets):

- Northern (530 MW): only operating between October and March for the immediate future and did not generate from July to September 2012;
- Playford B (240 MW): withdrawn due to unfavourable conditions and has not generated since February 2012;
- Tarong (700 MW): withdrawn two units for at least two years due to oversupplied energy market with lower than forecast electricity demand: these units have not generated since October and December 2012;
- Wallerawang (500 MW): one unit offline since late January 2013; and
- Yallourn (360 380 MW): taken offline in October due to unfavourable market conditions but returned to service in January 2013.

All of the above plant, including those returned to operation, are coal fired.

Wholesale spot prices are low, but there has been an increase in generation capacity: capacity in the NEM grew from 47,418 MW in 2009 to 48,311 MW in 2012.<sup>29</sup>

AEMO indicates in its 2012 Electricity Statement of Opportunities (ESOO) that wind generation makes up the majority of new committed projects with investments being primarily driven by the LRET and GreenPower schemes.<sup>30</sup>

The Frontier modelling assumes entry and exit from the NEM that is consistent with AEMO's *Tables of Existing and Committed Scheduled and Semi-Scheduled Generation by Region* report at the time of undertaking the modelling in mid-2012. This was prior to the announcements in relation to Playford, Northern, Tarong and Yallourn power stations.

If demand growth remains low, then future wholesale spot prices will be heavily influenced by the rate of entry and exit from the wholesale market. If entry is greater than forecast in Frontier's modelling then prices may go lower than those modelled in this report. If the inverse is true, which the recent announcements suggest may be the case, and generators exit the market more quickly than included in the AEMO report then prices may rise above those implied in the wholesale component price in this report.

## 2.3.3 Impact of fuel prices on wholesale energy prices

The nature of the generation mix in different states and territories tends to reflect the relative abundance and accessibility of the fuel resources located in those jurisdictions. For example, Victoria, New South Wales and Queensland are predominantly reliant on coal

Australian Energy Market Commission, Potential generator market power in the NEM, Draft determination,
 7 June 2012.

<sup>&</sup>lt;sup>29</sup> Australian Energy Regulator, *State of the Energy Market*, 2009, 2010, 2011, 2012.

<sup>&</sup>lt;sup>30</sup> Australian Energy Market Operator, *Electricity Statement of Opportunities 2012*, at page iv.

fired generation, while gas is the primary fuel source in South Australia. In contrast, the vast majority of electricity in Tasmania is generated from hydro-electric power.

In the short time period covered by this report, it is unlikely that there will be material changes in the generation mix of jurisdictions. This means that price trends in relation to wholesale prices for each jurisdiction will be heavily influenced by the current generation mix within that jurisdiction.

There are three material trends affecting generation input costs, each will affect different types of generators, and therefore wholesale prices in jurisdictions differently. They are:

- carbon costs;
- domestic gas prices; and
- international coal prices.

Each of these is discussed in turn below.

## Carbon Costs

On 1 July 2012, the Commonwealth Government's carbon price came into effect, adding \$23 per tonne of carbon dioxide equivalent (t CO2 –e) onto carbon emissions for the 2012/13 period. This will increase to \$24.15 a tonne in 2013/14 and \$25.40 a tonne in 2014/15. From 1 July 2015 the price will be set by the market.<sup>31</sup>

The carbon price increases the marginal generating costs for all non-renewable generation. This enables renewable generators to be relatively more competitive than without the carbon price.

The introduction of the carbon price increased wholesale prices in 2012/13. As the cost has been included in the current wholesale prices, further material increases in the wholesale price as the result of the carbon price in the rest of the period covered by this report, are not expected.

Frontier's modelling utilises the emissions intensity contained in AEMO's 2012 NTNDP. These are set out in Table 2.1 below:

## Table 2.1 NEM carbon dioxide intensity per MWh

Year	2012-13	2013-14	2014-15
NEM CO2 intensity per MWh	0.9153	0.9032	0.8841

Source: Australian Energy Market Operator, 2012 NTNDP Planning Scenario detailed results, NEM CO2-e intensity data.

The emissions intensity of electricity production will vary between regions based on the mix of generation technology in each region.

AEMO notes that emissions intensity following the introduction of carbon price to 13 October 2012 was 0.85. It also links this outcome to the flooding a Yallourn power

<sup>&</sup>lt;sup>31</sup> http://www.cleanenergyfuture.gov.au/clean-energy-future/securing-a-clean-energy-future/ chapter-3-putting-a-price-on-carbon-pollution/ Viewed on 19 February 2013.

station.<sup>32</sup> If the NEM carbon dioxide (CO2) intensity per MWh remains below the forecast used in this report then the carbon price trend will differ from those in the AEMO report.

## Domestic gas prices

Historically Australia's gas prices have not been directly linked to international prices and have, until now, remained comparatively low. This is likely to change with the increase in liquefied natural gas (LNG) exports competing for these commodities.

Much of the domestic gas supply has been underwritten by the existence of comparatively low-priced long term contracts. Many of these contracts are now coming to an end, particularly in New South Wales, and any new contracts that are negotiated are likely to include higher prices which, amongst other things, will have an impact on the competitiveness of gas-fired generation. Nevertheless, a tightening of the gas market, increasing competition and higher prices should provide an incentive for further development and production of reserves, albeit higher cost reserves. This would be expected to moderate gas prices in the medium to long term.<sup>33</sup>

Frontier's gas price input for modelling is based on the AEMO 2012 NTNDP, which is in turn based on ACIL Tasman's fuel cost projections 2012 report. This is based on seven committed LNG facilities (trains) by 2020, linking the gas price on the east coast of Australia with international LNG prices.<sup>34</sup>

Should there be less construction of LNG trains in Australia, or prices for LNG fall below that forecast by ACIL Tasman, then the wholesale price trend will be lower than estimated by the AEMC. Conversely, if international gas prices rise above that forecast by ACIL Tasman, then the wholesale trend will be above that estimated by the AEMC.

## International coal prices

Increasing export competition would be expected to keep coal prices in line with international thermal coal prices. The coal price used in Frontier's modelling is also based on the ACIL Tasman modelling for AEMO. On average, ACIL Tasman forecast that international coal prices, expressed in Australian dollars per gigajoule (GJ), would fall until 2014/15.

If international thermal coal prices rise or fall more quickly it may affect the cost of electricity generation and the estimated wholesale price. ACIL Tasman notes the following two factors that may affect the rate at which international coal prices feed into Australian electricity prices:

- prices being set by domestic production costs, rather than international thermal coal netbacks for many locations; and
- Australia's importance in the international traded thermal coal market, whereby fluctuations in the Australian dollar (which is more broadly linked with general commodity prices) are likely to influence the global price in United States dollars.

<sup>&</sup>lt;sup>32</sup> Australian Energy Market Operator, *Carbon price market review*, 8 November 2012, at page 14.

<sup>&</sup>lt;sup>33</sup> Bureau of Resources and Energy Economics, *Gas market report*, July 2012, page 47.

<sup>&</sup>lt;sup>34</sup> ACIL Tasman, *Fuel cost projections* 2012, 28 June 2012, at page 10.

The speed at which changes in international coal prices would feed through to the cost for coal generators would be dependent on the nature of the contracts that coal power stations have with their suppliers.

## 2.4 Government policies

## 2.4.1 State based environmental schemes

In addition to the Commonwealth enhanced Renewable Energy Target scheme and imposition of a carbon price, most jurisdictions have implemented at least one other retail environmental scheme in line with jurisdictional policies, generally where there is no national equivalent in place. Allowances for costs associated with these schemes continue to have some impact on the final retail price and can be expected to increase in line with increases in scheme targets.

Compared to the other jurisdictions, Tasmania, Western Australia and the Northern Territory either have few additional schemes implemented, or the costs are recovered via avenues other than as a cost allowance in the retail electricity price.

If a new scheme is introduced, or the existing schemes are substantially altered, then this would be expected to impact on residential price trends.

## 2.4.2 Enhanced Renewable Energy Target

The enhanced Renewable Energy Target (RET) scheme applies across all Australian jurisdictions and is the primary policy vehicle of the Commonwealth Government to promote the growth and deployment of renewable energy sources in Australia.<sup>35</sup> The scheme is split into two parts with separate targets and obligations for retailers. The costs of meeting these obligations are then passed onto customers through the retail electricity price.

The costs to consumers associated with the LRET are expected to continue to increase with the increasing annual target driving the demand for certificates.

The uptake of small scale generation has been buoyed, in the initial period covered by this review, by the effect of the solar credits multiplier under the Small scale Renewable Energy Scheme (SRES), the availability of subsidies and the incentives provided by many jurisdictional feed-in tariffs.

The continuing cost impact of the SRES is expected to decline from 2012/13 as uptake falls following the cessation of the Solar Credits Multiplier on 1 January 2013 and as the high feed-in tariffs in many jurisdictions come to an end for new participants.

<sup>&</sup>lt;sup>35</sup> The mandatory renewable energy target was introduced in Australia in 2001, and initially set a target of 9,500 GWh of new renewable generation by 2010. This target was expanded to 45,000GWh by 2020, from 1 January 2010. From 1 January 2011 the target operated as two parts, the Large scale Renewable Energy Target and the Small scale Renewable Energy Scheme. To accommodate this split, annual targets for LRET are set at 4000 (GWh) per year less than the previous RET targets, reaching 41,000 GWh by 2020. This is to take account of the separate mechanism to support small-scale renewable energy systems under SRES. The term 'enhanced Renewable Energy Target' has been used to refer to the scheme as it now operates after the 2011 change. See www.climatechange.gov.au for more information about this scheme.

Customers will continue to pay the costs for the installations that have already occurred as a result of the combined incentives provided by the SRES and jurisdictional feed-in tariffs.

The AEMC modelled the LRET and SRES in the same manner as it modelled the wholesale cost. That is, it used the jurisdictional provided numbers for 2012/13 as the starting point and then applied the Frontier modelled trend, or the Consumer Price Index (CPI), dependent on the jurisdiction.

Should the Commonwealth Government change the operation of either the SRES or the LRET in a way that is different to the assumptions behind the Frontier modelling, this would be expected to change the trend of the price to customers. More detail on the Frontier modelling can be found in their report to the AEMC.<sup>36</sup>

## 2.4.3 Government actions

The decision by some jurisdictional governments to move their regulated retail prices to a cost reflective basis may have an impact on retail electricity prices over the next few years.

In particular the Northern Territory Government announced an increase in the regulated retail price by 30 per cent as of 1 January 2013. This is intended to be a one-off price increase to customers and is designed, amongst other things, to contribute towards improving the financial stability of the incumbent utility operator.

In Queensland, the Government announced that it would freeze, except for the pass-through of the carbon price, the residential total price (Tariff 11) for 2012/13. The Queensland Competition Authority (QCA) has since been directed to transition this tariff to cost reflective levels over a three year period from 2013/14.

The South Australian Government has made a recent decision to deregulate electricity prices from 1 February 2013. It has also reached an agreement with AGL to reduce regulated retail prices for eligible customers by 9.1 per cent.

Excepting South Australia these jurisdictions, along with Western Australia, still currently retain a high level of subsidies within their pricing regimes. Whether, and how quickly, these jurisdictions move to cost reflective pricing will affect the trend of representative retail tariffs in those jurisdictions.

## 2.4.4 Jurisdictional approach to setting the wholesale price

A major factor in trends in regulated retail prices is the approach taken and assumptions used by jurisdictional regulators in estimating the wholesale electricity cost allowance during their retail price determinations.

Many jurisdictions have or are currently re-assessing their approach. Any adjustments may lead to one-off step changes to estimations of this cost.

The South Australian Government has decided to remove price regulation from 1 February 2013. As a result, the AEMC has adjusted its modelling to reflect a market based approach to the setting of the wholesale price in South Australia.

<sup>&</sup>lt;sup>36</sup> Frontier, *Possible future retail electricity price movements*, December 2012. This report can be accessed at www.aemc.gov.au.

Prior to removing retail price regulation, in setting prices for 2011/12 the Essential Services Commission of South Australia (ESCOSA) moved from a market based approach to a stand-alone long run marginal cost (LRMC) approach, in response to perceived market liquidity issues. The draft determination proposed a reversion back to a market approach, which would have resulted in an 8.1 per cent reduction in the regulated retail price.

The QCA in Queensland, under a new retail pricing requirement, will be moving from a 50:50 combination of the outcomes of the LRMC and market cost approaches to an approach the QCA have referred to as the hedging approach. This will affect regulated price outcomes in Queensland from 2013/14 onwards.

IPART in New South Wales is reviewing its approach to wholesale electricity estimation under its current terms of reference. This will affect regulated price outcomes in New South Wales from 2013/14 onwards.

Changes have also been made to the price determination process in Tasmania, ahead of restructuring of all sectors of the electricity market prior to the proposed commencement of full retail competition in 2014.

## 2.4.5 Changes in government energy policies

Government energy policies can influence either demand or supply side behaviour, depending on the goal of the policy. Renewable energy (including feed-in tariff schemes) and energy efficiency policies (including higher energy efficiency standards for construction and appliances) fall into this category.

These types of policies essentially provide a financial subsidy to the technology or activity that is being targeted, in order to incentivise development and/or uptake. These schemes also impose additional implementation and compliance costs on the retail or network businesses generally and may contribute to the overall energy costs for many consumers as the costs of these schemes are often spread across the network or retail customer base.

## 2.5 Calculation of prices in this report

Electricity prices faced by residential consumers, in particular regulated prices, are typically made up of two charge components:

- a fixed charge, which is usually charged on a daily basis regardless of whether any consumption actually occurs; and
- a variable charge, which is a charge for each unit of electricity consumed. For residential customers the unit charge is most commonly either a flat rate, which prices every unit of electricity consumed equally, or an inclining block rate structure, whereby the unit price increases once a certain consumption threshold has been reached within a given period.

As a general rule, a higher ratio of fixed to variable charges in the final retail price will have a greater impact on a customer with a lower level of consumption compared to a customer with a higher consumption level. This is because a fixed level of costs will apply automatically regardless of actual levels of consumption.
In this report, prices are calculated as an average charge on a cents per kilowatt-hour (c/kWh) basis. This allows for a degree of comparability across time periods. It does not reflect the actual price structure that is observed by customers, i.e. the proportions of a price that are fixed and variable, which may vary between retailers and jurisdictions.

## 2.6 Standing offers in Victoria

Estimations of retail electricity prices and trends for Victoria in this report are based on published retail standing offers, and are not directly comparable with regulated offers in other jurisdictions.

Standing offers differ in nature from the regulated retail prices in that they are produced by individual retailers, rather than being determined by a jurisdictional regulator or otherwise set by a jurisdictional government.

Standing offers will tend to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, the standing offers in that state are, on average, 12 per cent higher than current market offers.<sup>37</sup>

## 2.7 'Typical' customer consumption

The lack of a universally accepted method of calculating consumption levels across jurisdictions introduces inconsistencies in how the representative consumer is determined. These inconsistencies make price comparisons between different jurisdictions difficult.

Typical residential consumption is an important input in estimating future residential electricity price movements. As discussed in section 2.5, electricity prices typically have two components, a fixed charge and a variable charge. The terms of reference require that these prices be converted to a single cost, in cents per unit of usage over time, or per kilowatt hour (kWh).

Because these charges are expressed in different units, converting them into a single c/kWh value involves multiplying the fixed daily charge by 365 days and dividing it by the annual kWh consumption and adding it to the variable charge to get the final c/kWh value.

Assumptions on consumption levels therefore have an impact on the overall result since, for a given annual bill value, a higher consumption level will generally result in a lower c/kWh value compared to a lower consumption level.

There is currently no uniform way to calculate customer consumption and each jurisdiction has its own method, which may or may not be consistent with the other jurisdictions. For example, regulators may calculate customer consumption from information provided by distributors and retailers that operate in their jurisdiction, but there is no uniformity in whether this should include controlled load or not.

<sup>&</sup>lt;sup>37</sup> Essential Services Commission, *Energy retailers comparative performance report - pricing 2012*, September 2012 at page 43.

The AEMC acknowledges that there may be alternative levels of representative consumption that could be used in future reports. For example, the consumption levels identified in the tables established by ACIL Tasman in its report *Electricity bill benchmarks for residential customers* could be used.<sup>38</sup>

As these benchmarks may not currently be utilised in jurisdictional cost calculations, they have not been used in this report. Instead, the AEMC has applied the consumption that each jurisdictional government/regulator has identified as being the 'typical' residential consumption level in a particular jurisdiction. Some reference to the ACIL Tasman bill benchmarks is given for each jurisdiction, and is provided for the purpose of comparison. These benchmarks have not otherwise been included into the calculations.

Figure 2.4 illustrates some of the variations in 'typical' residential consumption levels between different sources.

Comparison of 'typical' residential consumption	Provided by jurisdictional governmen /regulators	Provided by the nts Australian Energy Regulator	ACIL Tasman Electricity bill benchmarks for residential customers, 2011 (persons per household)	
Queensland	• 5,370kWh	• 6-7,000kWh	<ul> <li>1/hh 4,030kWh</li> <li>2/hh 5,331kWh</li> <li>3/hh 6,633kWh</li> <li>4/hh 7,934kWh</li> </ul>	
New South Wales	• 7,000kWh	• 5-6,000kWh	<ul> <li>1/hh 4,422kWh</li> <li>2/hh 5,548kWh</li> <li>3/hh 6,673kWh</li> <li>4/hh 7,799kWh</li> </ul>	
Australian Capital Territory	• 8,162kWh	• 7,000kWh	<ul> <li>1/hh 5,939kWh</li> <li>2/hh 7,219kWh</li> <li>3/hh 8,500kWh</li> <li>4/hh 9,780kWh</li> </ul>	
Victoria	• 5,000kWh	• 4.5-5,000kWh	<ul> <li>1/hh 4,028kWh</li> <li>2/hh 4,835kWh</li> <li>3/hh 5,642kWh</li> <li>4/hh 6,449kWh</li> </ul>	
South Australia	• 5,000kWh	• 5,000kWh	<ul> <li>1/hh 4,398kWh</li> <li>2/hh 5,306kWh</li> <li>3/hh 6,213kWh</li> <li>4/hh 7,121kWh</li> </ul>	
Tasmania	• 7,841kWh	• 9,000kWh	<ul> <li>1/hh</li> <li>6,862kWh</li> <li>2/hh</li> <li>8,733kWh</li> <li>3/hh</li> <li>10,064kWh</li> <li>4/hh</li> <li>12,475kWh</li> </ul>	
Western Australia	• 5,801kWh	• n/a	<ul> <li>1/hh 4,107kWh</li> <li>2/hh 5,140kWh</li> <li>3/hh 6,173kWh</li> <li>4/hh 7,206kWh</li> </ul>	
Northern Territory	• 8,904kWh	• n/a	<ul> <li>1/hh 6,266kWh</li> <li>2/hh 7,806kWh</li> <li>3/hh 9,345kWh</li> <li>4/hh 10,885kWh</li> </ul>	

### Figure 2.4 Comparison of 'typical' residential consumption by jurisdiction

<sup>&</sup>lt;sup>38</sup> December 2011. This report was prepared for the Consumer Information Implementation Committee for the purposes of the National Framework for Energy Efficiency. The report forms the basis of the requirement, under the current National Energy Retail Law and Rules, that energy retailers must provide electricity consumption benchmarks on a residential customer's bill. The benchmarks will enable customers to compare their household electricity usage with similar households in their area. It is available from the website of the AER at http://www.aer.gov.au.

## 2.8 Contract types and prices

In jurisdictions where the residential retail market is competitive, some or all of the retailers may still be required to offer electricity supply under regulated prices to small customers in certain circumstances. This is usually to small customers located within their designated supply areas, or for which they are the financially responsible market participant.

Customers that meet certain requirements may also have a right to be offered supply under such contracts.<sup>39</sup> These types of contracts are referred to variously as 'standing offer contracts', 'standard contracts' or 'regulated contracts', depending on the jurisdiction, but in general these offers refer to price offers where the prices are set by the jurisdictional regulator.<sup>40</sup>

Victoria is the only jurisdiction to have removed all retail electricity price controls prior to the current year. In that state, retailers that supply to domestic or small business customers are required to publish and offer standing offers to these customers, the prices for which are not set by the regulator but by the retailers themselves.

The South Australian Government has recently announced the removal of price regulation from 1 February 2013, although final retail obligations in relation to retail offers are not yet known.

The non-price terms and conditions of supply for both standing and regulated offers may continue to be regulated, with all aspects of these offers, and contracts for supply, being published.

Even where retail price regulation remains, customers may still have access to a range of market offers from retailers. Market offers are not price regulated and may include discounts on the regulated prices or a range of other benefits to customers.

To a consumer, the key difference between market and regulated or standing arrangements is that market offers will generally be lower than regulated or standing offers. In some cases there may be other, non-price related, incentives included with market offers, such as discounts for early payment or magazine subscriptions.

The proportion of residential customers that are being supplied on regulated or standing offer arrangements compared to market arrangements differs in each jurisdiction. Not all jurisdictions appear to actively monitor the number of customers remaining on regulated or standing offer contracts, but there are indications that in some, this number is decreasing.<sup>41</sup>

For the purposes of this report, and unless the context otherwise requires, references to 'regulated' offers or prices are references to retail electricity offers or prices that are regulated by the jurisdictional regulator. References to 'standing' offers or prices refer to

<sup>&</sup>lt;sup>39</sup> This usually includes residential and small business customers that are within a specific, predetermined threshold of consumption.

<sup>&</sup>lt;sup>40</sup> These contractual arrangements are referred to as "standard retail contracts" under the National Energy Customer Framework.

<sup>&</sup>lt;sup>41</sup> For example, ESCOSA noted in its 2010/11 Annual performance of the South Australian retail energy (available on the ESCOSA website www.escosa.sa.gov.au) that 75 per cent of retail electricity customers have elected to enter into market contracts.

those retail electricity offers or prices that are not regulated, but which retailers are obliged to make.

In undertaking this review, analysis has been largely limited to standing or regulated prices offered to residential and small customers.<sup>42</sup> This meets the terms of reference requirements to base the report as far as possible on current regulatory determinations and ensure customers on these supply arrangements are a representative set of customers in each state and territory. This approach also offers a degree of transparency since in general, much of the information relating to approaches taken to estimate costs and the cost structure of these prices is publicly available.

This approach also explicitly assumes that the trends that are highlighted in relation to regulated or standing prices are generally reflective of, though not necessarily identical to, trends that might be observed in other types of retail offers. This may be true in some jurisdictions,<sup>43</sup> but there is no guarantee that the market prices will always change in line with the trends identified for standing or regulated prices in this report.

This approach does not take account of such factors as the structure of the prices surveyed, any cross subsidisation that may occur between a retailer's products, or the discounts or other benefits that may be offered to customers.

For the reasons given above, the estimations of retail electricity price movements in this report may overstate the actual prices paid by customers that are receiving supply on market offers.

<sup>&</sup>lt;sup>42</sup> In some jurisdictions these price offers are made to all customers under a particular threshold of annual consumption, including small business customers, rather than just residential customers. In such cases it is not always possible to separate these customer groups that receive supply under the same prices.

<sup>&</sup>lt;sup>43</sup> For example, IPART has commented that market based prices in New South Wales are influenced by changes in the regulated price: see IPART, *Changes in regulated electricity retail prices from 1 July 2012*, Final report, June 2012, note 2 on page 1. Comments to a similar effect have been made more recently in submissions to the South Australian investigation into the wholesale energy component of retail costs. See for example, the submissions made by the Energy Retailers Association of Australia (on page 1), and by AGL (on page 5). These submissions may be viewed on ESCOSA's website of at www.escosa.sa.gov.au.

## 3 Jurisdictional and national summaries

### 3.1 Note regarding price comparisons across jurisdictions

Prices differ by location: Australia does not have a single residential electricity price that applies to all residential customers. In general, prices faced by customers are determined by regional factors rather than by the market as a whole.

The retail electricity prices estimated for Victoria in this report are based on published retail standing offers and may not be directly comparable with regulated offers in other jurisdictions.

Standing offers differ in nature from the regulated retail prices in that they are independently set by individual retailers, rather than being determined by a jurisdictional regulator or otherwise set by a jurisdictional government. Standing offers will tend to overstate the actual prices paid by representative residential customers receiving supply on market offers.

According to the Essential Services Commission in Victoria, the standing offers in that state are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh to an average market offer price of 25.7 c/kWh.

More generally, in addition to the internal organisational factors that affect individual business performance, there are a range of external factors that may influence regional prices to a greater or lesser extent, for example:

- the dominant fuel available for generation: this affects the location of infrastructure and assets and, as an input into the generation process, also affects the price of energy generated;
- density of population: all things being equal, the higher the population density the greater the ability to achieve economies of scale in supply and the lower the cost of supply per customer;
- severity of seasonal fluctuations: more extreme climates might encourage a greater use of appliances, such as air conditioners, to mitigate the effects of extreme temperatures, which may contribute to investment requirements;
- historical structure of the energy industry and current ownership of energy infrastructure and assets; and
- the impact of jurisdictional government energy or welfare policies and programmes.

The interplay of these, and other, factors on the different components of electricity necessarily means that customers in each jurisdiction face different prices. As a consequence, direct comparisons of retail prices across jurisdictions should also consider these variations in locational influences.

Differences in electricity prices are magnified when trying to make direct and meaningful comparisons between countries due to the introduction of other complexities, such as exchange rates, which constantly fluctuate.

### 3.2 Queensland summary

### 3.2.1 General

### Box 3.1: Changes not included in the AEMC's estimations

### Tariff 11 price freeze

On 23 April 2012 the Queensland Government announced its intention to freeze tariff 11, the most common regulated residential retail offering, for 2012/13.

As this report focuses on the drivers of price trends rather than forecasting prices, the modelling undertaken for this report did not incorporate the price freeze. Using advice from the Queensland Competition Authority, the AEMC based its modelling for this tariff on the final determination for the residential time of use price, tariff 12.

### The AER's determination on the cost pass-through of 2011/12 feed-in tariffs

On 10 January 2013 the AER released determinations for both Energex and Ergon Energy in relation to their pass-through applications for costs incurred under the Queensland solar bonus scheme for 2011/12. These determinations approved increases of \$78.6 and \$27.8 million respectively and reflect the higher than expected take up of the scheme.<sup>44</sup>

As the modelling that underlies this report was completed in late 2012, it does not take account of this development. A preliminary assessment of the impact of the AER's approved changes indicates that from 2013/14 to 2014/15 the distribution network component would increase by 0.5c/kWh to 0.6 c/kWh. This would increase the total estimated retail price for 2013/14 to 27.7 c/kWh (from 27.1 c /kWh), and for 2014/15, to 28.5 c/kWh (from 27.9 c/kWh).

### The QCA's draft determination of retail prices

The QCA's most recent draft retail price determination was published in February 2013.<sup>45</sup> The results of this determination have not been included in the AEMC's modelling for this report. A preliminary assessment of the draft determination indicates that the QCA's draft determination differs from the AEMC's results for 2013/14 in relation to feed-in tariffs, proposed network prices and results for wholesale prices, the latter reflecting the difference in modelling methodologies.

<sup>44</sup> Australian Energy Regulator, Pass-through application for Queensland solar bonus scheme for 2011/12 by Energex Limited, Determination, January 2013; Australian Energy Regulator, Pass-through application for Queensland solar bonus scheme for 2011/12 by Ergon Energy Corporation Limited, Determination, January 2013.

<sup>&</sup>lt;sup>45</sup> Queensland Competition Authority, *Regulated Retail Electricity Prices* 2013/14, Draft determination, February 2013.

### Figure 3.1 Queensland at a glance

QUEENSLAND	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service	Powerlink	Queensland	Yes - regulated by Australian Energy	1 July 2012 -	- · · · · · · · · · · · · · · · · · · ·
Providers (INSPs)	2022	Government	Regulator (AER)	30 June 2017	
Distribution Network Service	Ergon Energy	Queensland	Yes – regulated by Australian Energy	1 July 2010 -	<ul> <li>Queensland Solar Bonus Scheme</li> </ul>
Providers (DNSPs)	Energex	Government	Regulator (AER)	30 June 2015	
Host retailers <sup>a</sup>	Origin Energy	Privately owned	Regulation of some retail tariffs	1 July 2012 -	<ul> <li>Carbon price (via the wholesale energy price)</li> </ul>
Ergon Er All retails	Ergon Energy	Queensland Government	generally undertaken by Queensland Competition Authority (QCA), except	30 June 2013	Large scale Renewable Energy Target (LRET)
	All retailers required to		in 2012-2013, whereby tariff 11		<ul> <li>Small scale Renewable Energy Scheme (SRES)</li> </ul>
	offer regulated/ notified prices		(main regulated residential tariff) was set by the Queensland Minister for Energy and Water Supply		Queensland Gas Scheme (QGS)
Residential customers <sup>b</sup>	Total	1,767,850			
Typical residential consumption levels <sup>c</sup>	5,370kWh	111000			
Typical household consumption <sup>d</sup>	1 person household	4,030kWh			
Sector and the sector of the sector se	2 person household	5,331kWh			
	3 person household	6,633kWh			
	4 person household	7,934kWh			

Sources: Queensland Department of Energy and Water Supply (DEWS), Queensland Competition Authority (QCA), Australian Energy Regulator (AER), Electricity Supply Association of Australia (ESAA).

- a. From AER, State of the energy market 2012, at page 120. Data current as at October 2012.
- b. As at 30 June 2011, ESAA, Electricity Gas Australia 2012.
- c. From information provided by DEWS (sourced from QCA): Tariff 11 consumption only; does not include controlled load.
- d. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

Full retail competition commenced in Queensland on 1 July 2007. Regulated prices<sup>46</sup> are available for customers who were not offered, or who choose not to enter into, a market contract for electricity supply.

At the same time the Queensland Government sold Sun Energy, the retail arm of Energex, to Origin Energy, and the contestable customers of Ergon Energy (Ergon) were sold to AGL.

Ergon provides retail services to the non-contestable customers located in regional and more remote parts of Queensland. Ergon's retail activities are nevertheless restricted under provisions introduced into the Queensland *Electricity Act 1994* on the commencement of full retail competition.<sup>47</sup> Under these provisions, Ergon is not permitted to offer market contracts and can only supply to non-market customers on the notified prices. Further, if these customers choose to switch to a market offer from another retailer then they are unable to return to Ergon for supply to those premises in the future.<sup>48</sup>

Queensland has a uniform tariff policy, which is a government policy to ensure electricity price parity between all customers throughout Queensland, regardless of their geographical location. Under this policy the costs of providing electricity services to customers in Ergon's distribution area are subsidised through the provision of community service obligation payments to Ergon Energy. This funds the difference between the actual costs of supply and the amount that Ergon can charge and recover from notified prices.<sup>49</sup>

The Queensland Government has recently initiated a number of measures to reform the electricity sector as part of its broader efforts to address concerns about the rising costs of living generally, in Queensland.<sup>50</sup>

On 22 September 2011 the QCA received an instruction from the Queensland Government to implement a new retail pricing methodology based on a building block approach to establish new regulated retail tariffs to commence from 1 July 2012.<sup>51</sup>

On 8 May 2012 a subsequent instruction was issued to the QCA which removed the main regulated residential tariff, tariff 11, from the scope of the original instruction. This enabled the Queensland Government to implement a freeze of this tariff for 2012/13 at its 2011/12 level, as announced on 23 April 2012. The freezing of tariff 11 would allow for a single adjustment for the carbon price, which was to be introduced later that year.

<sup>&</sup>lt;sup>46</sup> Referred to as 'notified prices' in Queensland.

<sup>47</sup> Electricity Act 1994 (Queensland), Section 55G.

<sup>&</sup>lt;sup>48</sup> Department of Employment, Economic Development and Innovation, *Ergon Energy's role in a competitive Queensland electricity market*, Information sheet available at www.deedi.qld.gov.au.

<sup>49</sup> Queensland Competition Authority, *Review of regulated retail electricity tariffs and prices*, Issues paper, June 2011 at page 4.

<sup>&</sup>lt;sup>50</sup> Queensland Government, Department of Energy and Water Supply website, www.dews.qld.gov.au, viewed on 5 January 2013.

<sup>&</sup>lt;sup>51</sup> Queensland Minister's covering letter and delegation of September 2011.

In May 2012 the Government announced the appointment of an Inter-Departmental Committee to consider reforms of the Queensland energy sector. The scope of this Committee covers all drivers of electricity prices including energy supply, network costs and retail competition and it will also consider the regulatory arrangements, structure of the energy sector, national governance and market operation.

The outcomes of this process are intended to assist the Government to determine the best approach for setting Queensland's regulated retail electricity prices for 2013-14 and beyond.<sup>52</sup> As part of this process the committee engaged an Independent Review Panel to review network issues. The review panel released an interim report on 24 November 2012, and a final report is expected to be delivered in early - mid 2013.

In September 2012 the Queensland Government also issued a new instruction to the QCA in relation to the approach of future regulation of all regulated prices from 1 July 2013 to 30 June 2016.<sup>53</sup> It includes requirements to consider:

- the continued application of the uniform tariff policy;
- further improvement of retail time-of-use pricing to enhance the underlying network price signals, and encourage their adoption by customers; and
- the continued use of the network + retail cost build up approach, where the network cost is treated as a pass-through in the retail price determination process.

The draft determination was published in February 2013. The QCA considered in its draft determination that the three year regulation period would allow it to include a cost pass-through mechanism to account for the material impacts of unforeseen or uncertain events on retailers' costs, in the future resets. This was previously not possible under benchmarked approach, or the 2012/13 determination which covered only the single year.<sup>54</sup>

<sup>&</sup>lt;sup>52</sup> Queensland Government, Department of Energy and Water Supply website, www.dews.qld.gov.au, viewed on 5 January 2013; Inter-Departmental Committee on electricity sector reform, *Terms of reference*.

<sup>&</sup>lt;sup>53</sup> Queensland Minister's covering letter and delegation of September 2012.

<sup>&</sup>lt;sup>54</sup> Queensland Competition Authority, *Regulated Retail Electricity Prices* 2013/14, Draft determination, February 2013, at page 56.

#### 3.2.2 Trends in Queensland regulated retail electricity prices

#### Box 3.2: Key points for Queensland

From 2011/12 to 2012/13, regulated prices in Queensland rose nominally by 16 per cent. This is equivalent to a nominal increase of 3.4 c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will increase at an average annual rate of four per cent. This is equivalent to a total nominal increase of 2.3 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, change to the distribution network component is the main driver of overall change to the regulated retail price in Queensland.

	30.0		25.6	27.1	27.9
	25.0	22.1			
	20.0				-
	15.0	-	_		_
	10.0				
/kWh (nominal)	5.0	Base Year	Current Year	Projection	Projection
:/kWh (nominal)	5.0	Base Year 2011/12	Current Year 2012/13	Projection 2013/14	Projection 2014/15
:/ <b>kWh (nominal)</b> QLD Gas Scheme	5.0	Base Year 2011/12 0.1	Current Year 2012/13 0.1	Projection 2013/14 0.1	Projection 2014/15 0.1
/kWh (nominal) QLD Gas Scheme Small Scale Renewable Ei	5.0 -	Base Year 2011/12 0.1 0.7	Current Year 2012/13 0.1 0.6	Projection 2013/14 0.1 0.3	Projection 2014/15 0.1 0.2
:/kWh (nominal) QLD Gas Scheme Small Scale Renewable Ei Large Scale Renewable Ei	5.0	Base Year 2011/12 0.1 0.7 0.4	Current Year 2012/13 0.1 0.6 0.4	Projection 2013/14 0.1 0.3 0.4	Projection 2014/15 0.1 0.2 0.4
c/kWh (nominal) QLD Gas Scheme Small Scale Renewable E Large Scale Renewable E Retail Margin	5.0	Base Year 2011/12 0.1 0.7 0.4 1.1	Current Year 2012/13 0.1 0.6 0.4 1.4	Projection 2013/14 0.1 0.3 0.4 1.5	Projection 2014/15 0.1 0.2 0.4 1.5
c/kWh (nominal) QLD Gas Scheme Small Scale Renewable E Large Scale Renewable E Retail Margin Retail	5.0	Base Year 2011/12 0.1 0.7 0.4 1.1 1.1	Current Year 2012/13 0.1 0.6 0.4 1.4 2.4	Projection 2013/14 0.1 0.3 0.4 1.5 2.5	Projection 2014/15 0.1 0.2 0.4 1.5 2.6
c/kWh (nominal) QLD Gas Scheme Small Scale Renewable E Large Scale Renewable E Retail Margin Retail	5.0	Base Year 2011/12 0.1 0.7 0.4 1.1 1.1 0.0	Current Year 2012/13 0.1 0.6 0.4 1.4 2.4 0.1	Projection 2013/14 0.1 0.3 0.4 1.5 2.5 0.1	Projection 2014/15 0.1 0.2 0.4 1.5 2.6 0.1
C/kWh (nominal) QLD Gas Scheme Small Scale Renewable Ei Large Scale Renewable Ei Retail Margin Retail Feed-in Tariffs Distribution	5.0	Base Year 2011/12 0.1 0.7 0.4 1.1 1.1 0.0 9.1	Current Year 2012/13 0.1 0.6 0.4 1.4 2.4 0.1 10.6	Projection 2013/14 0.1 0.3 0.4 1.5 2.5 0.1 12.0	Projection 2014/15 0.1 0.2 0.4 1.5 2.6 0.1 12.5
c/kWh (nominal) QLD Gas Scheme Small Scale Renewable E Large Scale Renewable E Retail Retail Feed-in Tariffs I Distribution Transmission	5.0	Base Year 2011/12 0.1 0.7 0.4 1.1 1.1 0.0 9.1 1.9	Current Year 2012/13 0.1 0.6 0.4 1.4 2.4 0.1 10.6 1.9	Projection 2013/14 0.1 0.3 0.4 1.5 2.5 0.1 12.0 2.0	Projection 2014/15 0.1 0.2 0.4 1.5 2.6 0.1 12.5 2.1
c/kWh (nominal) QLD Gas Scheme Small Scale Renewable Er Large Scale Renewable Er Retail Retail Feed-in Tariffs I Distribution I Transmission I Carbon costs	5.0	Base Year 2011/12 0.1 0.7 0.4 1.1 1.1 0.0 9.1 1.9	Current Year 2012/13 0.1 0.6 0.4 1.4 2.4 0.1 10.5 1.9 2.4	Projection 2013/14 0.1 0.3 0.4 1.5 2.5 0.1 12.0 2.0 2.4	Projection 2014/15 0.1 0.2 0.4 1.5 2.6 0.1 12.5 2.1 2.5

### Figure 3.2 Queensland - residential electricity price trends from 2011/12 to 2014/15

### Notes:

1. These values do not incoporate recent pass through approvals by the AER in respect of feed-in tariff costs for 2011/12, or retail price proposals under the QCA's draft retail price determination for 2013/14.

2. Values are nominal (not adjusted for inflation) and exclusive of GST.

3. Numbers may not add due to rounding.

# Figure 3.3 Queensland - summary of price trends by component from 2011/12 to 2014/15

Queensland	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	4%	3%	0.2	3%
Distribution component	16%	9%	3.4	59%
Wholesale energy component	4%	2%	0.7	13%
Retail component	48%	-1%	1.5	26%
Total	16%	4%	5.8	100%

Notes:

1. These values do not incoporate recent pass through approvals by the AER in respect of feed-in tariff costs for 2011/12, or retail price proposals under the QCA's draft retail price determination for 2013/14.

2. Values are nominal (not adjusted for inflation) and exclusive of GST.

3. Numbers may not add due to rounding.

### 3.2.3 Transmission network component

### Results

Between 2011/12 and 2012/13, the transmission network component increased by four per cent (0.1 c/kWh) in nominal terms. This contributed two per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by three per cent per year. This equates to a total increase in this component of 0.1 c/kWh. This compares with the total estimated increase of 2.3 c/kWh across all components over this remaining period.

### Background

Powerlink's current determination runs from 1 July 2012 until 30 June 2017. The AER's final decision allowed for a total maximum allowed revenue of \$4,679 million over the regulatory control period. The decision notes that this is an increase of about 49 per cent from the previous allowance, but is about 6.3 per cent below the revenue allowance proposed by Powerlink.<sup>55</sup>

Notwithstanding the overall increase allowed, the AER reduced the capital expenditure allowance proposed by Powerlink, in line with its expectation of a reduced demand forecast, leading to a deferral of load driven capital expenditure, including augmentation, easement and connections expenditure.<sup>56</sup> Operational expenditure was also reduced due to lower than forecast labour costs.

<sup>&</sup>lt;sup>55</sup> Australian Energy Regulator, *Powerlink transmission determination 2012/13-2016/17*, April 2012, at page iv.

<sup>&</sup>lt;sup>56</sup> Australian Energy Regulator, *Powerlink transmission determination 2012/13-2016/17*, April 2012, chapter 3.

The current determination provides for a decrease in the rate of return of about 0.2 per cent compared to the previous regulatory control period.<sup>57</sup>

### 3.2.4 Distribution network component

### Results

Between 2011/12 and 2012/13, the distribution network component, including the feed-in tariff, increased by 16 per cent (1.4 c/kWh). This contributed 42 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average by nine per cent per year. This equates to a total increase in this component of 1.9 c/kWh. This compares with the total estimated increase of 2.3 c/kWh across all components over this remaining period.

### Background

The current regulatory control period for Ergon and Energex is from 1 July 2010 until 30 June 2015.

In its final determination, the AER accepted the need for network expansion based on the prospect of increasing economic activity driven by the minerals sector, and also made provision for growth in maximum demand.<sup>58</sup>

The network costs approved under the current determination were also driven by the adoption of new reliability standards following the review of an independent panel. This review was triggered by a series of extended outages that occurred in Queensland in 2004 as a result of some significant climate events.

The panel made a number of findings and recommendations which were accepted by the Queensland Government, resulting in changes to the regulatory framework and requiring a high level of expenditure to achieve. These changes included the establishment of service standards and implementation of a security of supply standard of N-1 for critical assets and infrastructure.<sup>59</sup>

Following the release of the AER's final determination, both Ergon and Energex lodged appeals with the Australian Competition Tribunal (Tribunal) on the revenue aspects of the decision. The Tribunal handed down its decision on 19 May 2011.<sup>60</sup>

The Tribunal's decision was to allow the recovery of additional revenue and thereby increase distribution network costs. Energex and Ergon were permitted to recover an

<sup>&</sup>lt;sup>57</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: 8.8 per cent approved for 2012-2017, compared to 8.6 per cent approved previously: *Powerlink Queensland transmission network revenue cap* 2007/08-2011/12, Decision, 14 June 2007 at page 106; *Powerlink transmission determination* 2012/13-2016/17, April 2012, at page 33.

<sup>&</sup>lt;sup>58</sup> Australian Energy Regulator, *State of the energy market 2011*, at page 63.

<sup>&</sup>lt;sup>59</sup> See *Electricity network capital program review 2011, report of the Independent Panel,* December 2011.

<sup>&</sup>lt;sup>60</sup> This decision was delivered together with the decision in relation to the appeal by the South Australian distribution company, SA Power Networks (formerly ETSA Utilities). They may be accessed on the AER's website www.aer.gov.au.

additional \$298 million and \$243 million respectively, over the current five year regulatory period.  $^{61}$ 

The Queensland Government subsequently instructed both corporations to limit the amount of additional revenue to be recovered under the Tribunal's decision, and issued directions to this effect. Energex and Ergon subsequently adjusted their network prices to raise \$52 million and \$41 million less respectively than would otherwise have been allowed under the Tribunal's decision.<sup>62</sup>

The Queensland Government also directed both Energex and Ergon not to pass on to customers the costs related to the damage caused by the storms experienced in  $2010/11.^{63}$ 

The AER network determinations also allowed for an increase in the rate of return of about 1.2 per cent for each network compared to the previous regulatory control period.<sup>64</sup>

Historically the QCA adjusted regulated retail prices by an index, the Benchmark Retail Cost Index (BRCI). The total network component of the BRCI was based on the QCA's assessment of the maximum allowable revenue approved by the AER for Ergon and Energex.

The current retail pricing delegation now requires the QCA to consider basing the network component for residential and small business customers<sup>65</sup> on the approved network charges to be levied by Energex. This approach will apply in the retail price determinations from 1 July 2013 - 30 June 2016.<sup>66</sup>

### Queensland Solar Bonus Scheme

The Queensland Solar Bonus Scheme commenced in 2008. Under the initial terms, eligible households and other small customers would be paid 44 c/kWh for surplus electricity from their solar photovoltaic panel systems exported to the Queensland electricity grid until 2028.

Due to higher than expected levels of uptake, the price was reduced to 8 c/kWh for new applicants from 10 July 2012, and which is scheduled to end on 1 July 2014.

<sup>&</sup>lt;sup>61</sup> The total expected revenue allowances under the AER determinations were \$7,015.6 million (nominal) for Energex and \$6,556 million (nominal) for Ergon. See *Application by Energex Limited*, (No.2) [2010] ACompT (19 May 2011); *Application by Ergon Energy Corporation Limited*, (No.3) [2010] ACompT (19 May 2011).

<sup>&</sup>lt;sup>62</sup> The Ministerial direction also includes that the foregone revenue is not to be recovered in future network tariffs: see Queensland Competition Authority, *Benchmark Retail Cost Index for Electricity:* 2011-12, Final decision, May 2011, Appendix 3.

<sup>&</sup>lt;sup>63</sup> Ibid at page 28.

<sup>&</sup>lt;sup>64</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: 8.5 per cent approved for 2010-2015, compared to 9.72 per cent approved previously: Queensland Competition Authority, *Regulation of electricity distribution*, Final determination, April 2005, at page 129; Australian Energy Regulator, *Queensland distribution determination 2010/11 to 1014/15*, Final decision, May 2010 at page vii. This calculation excludes any impact from the subsequent Tribunal decisions.

<sup>65</sup> Consuming less than 100MWh per annum.

<sup>66</sup> *Ministerial delegation*, September 2012, at page 2.

Funding for the scheme is provided by Queensland's electricity distributors as a requirement of their Distribution Authorities under the *Electricity Act* 1994. A recent decision of the AER approved the recovery of these costs from all electricity customers via network charges from 1 July 2010. At the time of the determination the AER noted that there was a level of uncertainty around the final expenditure associated with the amounts to be paid/ recovered under the scheme. Any over or under recovery for a period would be adjusted in subsequent periods.<sup>67</sup>

Distributor obligations in relation to the Queensland Solar Bonus Scheme are estimated to add 0.1 c/kWh annually to the distribution network component over the review period.

Both Ergon and Energex lodged cost pass-through applications to recover costs incurred in 2011-12 under the Queensland scheme. Ergon applied for a total cost pass-through of around \$28 million and Energex proposed a cost pass-through of around \$78.5 million. These totals represent the difference between the forecast and actual payments made under the scheme for the period. Both applications proposed that these amounts be included in the network charges for the 2013-14 regulatory year.<sup>68</sup>

These applications were approved by the AER on 10 January 2013. The outcome of these approvals is that both companies will increase their approved revenues in 2013/14 by the above amounts. For Energex this is an increase of six per cent from the final determination, while for Ergon this is an increase of two per cent.<sup>69</sup> Energex noted in its application that it appears likely that the scheme will result in a "further significant positive pass-through" event in the next regulatory year.<sup>70</sup>

As these approvals were published after the modelling for this report was completed, the pass-through amounts have not been accounted for in the modelling of price movements for 2013-14. A preliminary assessment of the impact of the AER's approved changes indicates that from 2013/14 to 2014/15 the distribution network component would increase by 0.5c/kWh to 0.6 c/kWh. This would increase the total retail price for 2013/14 to 27.7 c/kWh (from 27.1 c /kWh), and 2014/15 to 28.5 c/kWh (from 27.9 c/kWh).

An issues paper has been released by the QCA to initiate an investigation into a fair and reasonable feed-in tariff. A final report is expected to be delivered in March 2013.<sup>71</sup>

<sup>&</sup>lt;sup>67</sup> Australian Energy Regulator, *Queensland distribution determination 2010/11 to 1014/15*, Final decision, May 2010 at page 25.

<sup>68</sup> Ergon Energy - Feed-in tariff cost pass-through application 2011-12, 5 November 2012; Energex - Feed-in tariff cost pass-through application 2011-12, 18 October 2012. Both documents may be accessed from the AER website, www.aer.gov.au.

<sup>&</sup>lt;sup>69</sup> Australian Energy Regulator, *Pass-through application for Queensland solar bonus scheme for 2011/12 by Energex Limited*, Determination, January 2013; Australian Energy Regulator, *Pass-through application for Queensland solar bonus scheme for 2011/12 by Ergon Energy Corporation Limited*, Determination, January 2013.

<sup>&</sup>lt;sup>70</sup> Australian Energy Regulator, *Pass-through application for Queensland solar bonus scheme for 2011/12 by Energex Limited,* Determination, January 2013 at page 2.

<sup>71</sup> Queensland Competition Authority, *Estimating a fair and reasonable solar feed-in tariff for Queensland*, Issues paper, August 2012.

### 3.2.5 Wholesale energy component

### Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by four per cent (0.3 c/kWh) in nominal terms. This contributed ten per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by two per cent per year. This equates to a total increase in this component of 0.4 c/kWh. This compares with the total estimated increase of 2.3 c/kWh across all components over this remaining period.

### Background

Historically the QCA based its estimates of the wholesale energy costs on a 50:50 combination of the outcomes of the long run marginal cost (LRMC) and market cost modelling approaches. This was the approach adopted by the QCA under the previous BRCI methodology. The legislation underpinning the BRCI also required that the wholesale energy component reflected the QCA's estimate of the LRMC of energy.

In its most recent determination, consistent with the revised delegation, the QCA adopted a market based approach<sup>72</sup> to estimating the wholesale energy costs for 2012/13, without reference to the LRMC.

The initial fall in the wholesale energy component from 2011/12 to 2012/13 partly reflects the impact of this change in the approach taken by the QCA.

In this report, the wholesale energy component has been adjusted by CPI for 2013/14 and 2014/15.73  $\,$ 

### Carbon price

The carbon price in 2012/13 is 2.4 c/kWh. This is on par with the 2.38c/kWh indicated by the QCA to be the impact of the carbon price on tariff  $11.^{74}$  This is estimated to remain stable over the remaining period. This reflects the adjustment of wholesale costs, and therefore the carbon cost, by CPI in the final years of the period.<sup>75</sup>

<sup>&</sup>lt;sup>72</sup> Referred to by the QCA as a 'hedging-based approach'.

<sup>&</sup>lt;sup>73</sup> The level of complexity of the model adopted by the QCA was not suitable to be replicated for this report. This change in approach by the QCA is discussed in more detail under section 5.1.6.

<sup>&</sup>lt;sup>74</sup> Queensland Competition Authority, *Advice on Tariff* 11, June 2012.

<sup>&</sup>lt;sup>75</sup> Frontier Economics, *Possible future retail electricity price movements*, November 2012.

### 3.2.6 Retail component

### Results

Between 2011/12 and 2012/13, the retail component, including the retail environmental scheme obligations, increased by 48 per cent (1.6 c/kWh) in nominal terms. This contributed 46 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, average, by one per cent per year. This equates to a total decrease in this component of 0.1 c/kWh. This compares with the total estimated increase of 2.3 c/kWh across all components over this remaining period.

### Background

Historically the QCA has used a benchmark approach to determine adjustments to all regulated retail prices.<sup>76</sup> This approach did not involve a bottom-up calculation of the efficient retail price of electricity each year but an adjustment of the existing notified prices by an index, the BRCI, which measured the expected change in the underlying cost of supplying electricity to customers; that is, by the change in the BRCI. Using this approach, all regulated retail prices were escalated by the same percentage.<sup>77</sup>

In its draft determination for 2012,<sup>78</sup> and in response to an instruction from the then Government to introduce a more cost reflective pricing mechanism, the QCA proposed a 'network + retail' cost build up approach to better reflect the costs of consumption.<sup>79</sup> This approach was proposed to apply to all regulated prices.

On 23 April 2012, the Queensland Government announced that it would freeze tariff 11 – the regulated standard residential electricity rate – at its 2011/12 price for the 2012/13 period, allowing an adjustment only for the cost of the Commonwealth Government's carbon price.<sup>80</sup>

The Queensland Government has issued new instructions to the QCA to determine regulated retail electricity prices from 1 July 2013 to 13 June 2016. This includes a requirement to consider a three year transition period to move tariff 11 towards more cost reflective pricing.<sup>81</sup>

<sup>&</sup>lt;sup>76</sup> There are currently still a number of regulated retail prices operating in Queensland, which apply to different classes of customers. In addition to tariff 11, which is the standard regulated residential rate, there are also farming and irrigation tariffs, as well as large business tariffs that apply in Ergon's business area.

<sup>77</sup> Queensland Competition Authority, *Benchmark retail cost index*, Final decision, May 2010 at page 1.

<sup>78</sup> Queensland Competition Authority, *Benchmark retail cost index for electricity*: 2012-13, draft determination, March 2012.

<sup>79</sup> This direction followed a review by the QCA of electricity pricing and tariff structures in 2009: Queensland Competition Authority, *Review of electricity pricing and tariff structures*, Stage 1 Final report, September 2009; *Review of electricity pricing and tariff structures*, Stage 2 Final report, November 2009.

<sup>80</sup> *Queensland Government Gazette* No. 43, Vol. 360, Friday 29 June 2012, page 715.

<sup>&</sup>lt;sup>81</sup> This delegation was received in February 2013.

A draft determination was published on 22 February 2013, and sets out the QCA's proposed approach to the transition of tariff 11. The QCA has indicated that the transition will involve a re-balancing of the fixed and variable components of the tariff to bring it to a cost reflective level by 1 July 2015. This will have an additional price impact for customers supplied on that tariff.<sup>82</sup>

The QCA also notes that the major driver of underlying supply costs are driven by increases in the network charges, reflecting such things as:

- distribution increases approved by the AER;
- increased costs relating to the Solar Bonus Scheme;
- the catch up from the freeze of tariff 11 in 2012/13;<sup>83</sup>
- the catch up from previously under-recovered revenues; and
- the impact of declining consumption.<sup>84</sup>

As the modelling underlying this report was completed by late 2012, it does not take account of the outcome of this draft determination or the recently approved cost pass-throughs.

The delegation now covers a three year period, rather than a one year period as previously, although prices will still be set on an annual basis.<sup>85</sup>

On 25 June 2012 Origin Energy commenced an application for Judicial Review of the QCA's final determination on notified prices for 2012/13, on the basis that the actual costs incurred by retailers were understated, leading to an artificially low retail price being set. On 19 December 2012, the Supreme Court upheld the QCA's process for setting notified prices for 2012/13.<sup>86</sup>

For the purposes of this report the AEMC reviewed, and used, elements of the tariff 12 build up as proposed in the QCA's final determination. This was based on the assumption that the tariff 11 freeze would not continue beyond the twelve month period, and that all other regulated prices were moved to the new methodology in the final determination as proposed by the QCA.<sup>87</sup>

There was a step increase in the retail component between 2011/12 and 2012/13 which reflects the QCA's move away from applying an indexed increase across all regulated

<sup>&</sup>lt;sup>82</sup> Queensland Competition Authority, *Regulated retail electricity prices 2013/14*, Draft determination, February 2013 at page 67.

<sup>&</sup>lt;sup>83</sup> It is understood from discussions with the Department of Water and Energy Supply (DEWS) that the reduction in the Energex network charges to subsidise the price freeze will not be recovered.

<sup>84</sup> Queensland Competition Authority, *Regulated retail electricity prices 2013/14*, Draft determination, February 2013 at page vii. These factors have not been included in the modelling for this report.

<sup>&</sup>lt;sup>85</sup> Queensland Competition Authority, *Regulated retail electricity prices 2013/14*, Interim consultation paper, September 2012, page 1.

<sup>&</sup>lt;sup>86</sup> Origin Energy, ASX/Media release, 19 December 2012.

<sup>&</sup>lt;sup>87</sup> Queensland Competition Authority, *Benchmark retail cost index for electricity:* 2012-13, Final determination, May 2012.

prices to applying a building blocks approach in determining the price for each individual regulated offer.  $^{88}$ 

The retail operating costs in 2012/13, as modelled by the QCA, were adjusted from the previous year by CPI (three per cent),<sup>89</sup> and the retail margin was set at 5.4 per cent.<sup>90</sup> This was increased from five per cent in the previous year, in line with increases made in the New South Wales retail electricity price determination.<sup>91</sup>

### Enhanced Renewable Energy Target

The LRET added an additional 0.4 c/kWh annually to the retail component in 2011/12 and is estimated to remain around this level until 2014/15.

The SRES added an additional 0.7 c/kWh to the retail component in 2011/12, but this is estimated to decrease to 0.2 c/kWh by 2014/15. This is attributed to the general reduction in feed-in tariffs paid to new participants under the various jurisdictional schemes, and cessation of the Solar Credits multiplier on 1 January 2013.

### Queensland Gas Scheme

From 2011/12 to 2014/15 the Queensland Gas Scheme is estimated to add an additional 0.1 c/kWh annually to the retail component.

The Queensland Gas Scheme began in 2005 and was established to boost the state's gas industry and reduce greenhouse gas emissions. Under the scheme, Queensland electricity retailers and other liable parties are required to source a prescribed percentage of their electricity from gas-fired generation.<sup>92</sup>

The scheme offers gas-fired generators a direct subsidy to offset the higher cost of gas-fired generation when compared with coal. This requirement therefore creates an additional cost to retailers in purchasing electricity, which is passed through to customers.

This scheme is currently legislated to end in 2019.

<sup>&</sup>lt;sup>88</sup> This does not take into account any steps that the QCA may determine to be necessary to transition tariff 11, over a three year period as required under the terms of the Ministerial delegation, to a cost reflective price level.

<sup>89</sup> See Queensland Competition Authority, *Regulated retail electricity prices*: 2012/13, Final determination, May 2012, at page 65.

<sup>&</sup>lt;sup>90</sup> This is equivalent to 5.7 per cent on top of total allowed costs.

<sup>&</sup>lt;sup>91</sup> Ibid, at pages 74-76.

<sup>&</sup>lt;sup>92</sup> The target is currently set at 15 per cent with facility to increase this to 18 per cent by 2020.

### 3.3 New South Wales summary

### 3.3.1 General

Full retail competition commenced in New South Wales (NSW) in 2002. Full ownership of the three incumbent retail and network businesses was retained by the New South Wales Government until 2011, when the three retail businesses were privatised. EnergyAustralia was sold to TRUenergy, and Integral Energy and Country Energy to Origin Energy.<sup>93</sup> Following privatisation of the retail assets, the network businesses were re-branded as Ausgrid (previously EnergyAustralia), Endeavour Energy (previously Integral Energy), and Essential Energy (previously Country Energy).

More recently the operations of the three network businesses have been merged under the management of a new, single structure (referred to collectively as Networks NSW) in an effort to streamline operations, reduce duplication and achieve a level of savings through improved efficiency and economies of scale.

The Government is also the owner of the state's transmission business, TransGrid, which was largely unaffected by the retail and distribution network reforms.

Retail price regulation remains in place for small customers: provided they remain eligible, these customers are currently free to move between regulated and market offers. Just over half of small retail customers in New South Wales currently remain on regulated retail tariffs, compared with around 66 per cent in 2009.<sup>94</sup>

In September 2012 the Independent Pricing and Regulatory Tribunal (IPART) received a new instruction to continue the regulation of retail electricity (and gas) prices for small retail customers in New South Wales, until 30 June 2016.<sup>95</sup> The New South Wales Government has also proposed to decrease the annual consumption threshold of a 'small customer' from 160 megawatt-hours (MWh) to less than 100 MWh.

The AEMC has also commenced its review of the effectiveness of competition in the electricity and gas markets in New South Wales. This review is intended to provide advice to the New South Wales government on the further deregulation of the retail electricity and gas markets, and scheduled to be completed by September 2013.<sup>96</sup>

<sup>&</sup>lt;sup>93</sup> The sale of the retail arms of these businesses was announced in December 2010 and took effect on 1 March 2011. Customers of the former state owned retailers were automatically transferred as customers to the new retailers.

<sup>&</sup>lt;sup>94</sup> Independent Pricing and Regulatory Tribunal, *Terms of reference - review of regulated electricity retail tariffs and charges 2013 to 2016, 27 September 2012.* 

<sup>&</sup>lt;sup>95</sup> The terms of reference were dated 27 September 2012 and may be viewed on IPART's website, http://www.ipart.nsw.gov.au.

<sup>&</sup>lt;sup>96</sup> More information about this review may be accessed from the AEMC website, www.aemc.gov.au.

### Figure 3.4 New South Wales at a glance

NEW SOUTH WALES	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service	TransGrid	NSW Government	Yes - regulated by Australian Energy	1 Jul 2009 -	17. (B)
Providers (INSPs)			Regulator (AER)	30 June 2014	
Distribution Network Service	Ausgrid	NSW Government	Yes – regulated by Australian Energy	1 July 2009 -	<ul> <li>Solar Bonus Scheme/ Climate Change Fund</li> </ul>
Providers (DNSPs)	Endeavour Energy		Regulator (AER)	30 June 2014	
	Essential Energy				
Host retailers <sup>a</sup>	Origin Energy b	Privately owned	Standard residential/small customer	1 July 2010 -	<ul> <li>Carbon price (via the wholesale energy price)</li> </ul>
	EnergyAustralia <sup>c</sup>		retail tariff regulated by Independent	30 June 2013	<ul> <li>Large scale Renewable Energy Target (LRET)</li> </ul>
		Pricing and Revenue Tribunal		Small scale Renewable Energy Scheme (SRES)	
			(IPART)		Energy Savings Scheme (ESS)
Residential customers <sup>d</sup>	Total	2,931,392			
Typical residential consumption levels <sup>e</sup>	7,000 kWh				
Typical household consumption <sup>f</sup>	1 person household	4, <mark>4</mark> 22kWh			
	2 person household	5,548kWh			
	3 person household	6,673kWh			
	4 person household	7,799kWh			

Sources: Independent Pricing and Regulatory Tribunal (IPART), Australian Energy Regulator (AER), Electricity Supply Association of Australia (ESAA).

a. From AER, State of the energy market 2012, at page 120. Data current as at October 2012.

b. Trading as Integral Energy and Country Energy.

- c. Formerly TRUenergy.
- d. As at 30 June 2011, from information provided by IPART.
- e. From information provided by IPART.

f. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

#### 3.3.2 Trends in New South Wales regulated retail electricity prices

### Box 3.3: Key points for New South Wales

From 2011/12 to 2012/13, regulated prices in New South Wales rose nominally by 20 per cent. This is equivalent to a nominal increase of five c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will nominally increase at an average annual rate of one per cent. This is equivalent to a total nominal increase of 0.5 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, changes in the transmission and distribution network components are the main drivers of overall change to the regulated retail price in New South Wales.

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(k)Wh (nominal)	and the second second			
:/KWh (nominal)	Base Year 2011/12	Current Year 2012/13	Projection 2013/14	Projection 2014/15
/kWh (nominal) -	Base Year 2011/12 0.1	Current Year 2012/13 0.2	Projection 2013/14 0.2	Projection 2014/15 0.2
/kWh (nominal)	Base Year 2011/12 0.1 0.6	Current Year 2012/13 0.2 0.6	Projection 2013/14 0.2 0.2	Projection 2014/15 0.2 0.2
/KWh (nominal)	Base Year 2011/12 0.1 0.6 0.3	Current Year 2012/13 0.2 0.6 0.5	Projection 2013/14 0.2 0.2 0.5	Projection 2014/15 0.2 0.2 0.5
/KWh (nominal)	Base Year 2011/12 0.1 0.6 0.3 1.3	Current Year 2012/13 0.2 0.6 0.5 1.6	Projection 2013/14 0.2 0.2 0.5 1.5	Projection 2014/15 0.2 0.2 0.5 1.6
c/kWh (nominal)	Base Year 2011/12 0.1 0.6 0.3 1.3 1.4	Current Year 2012/13 0.2 0.6 0.5 1.6 1.5	Projection 2013/14 0.2 0.2 0.5 1.5 1.5	Projection 2014/15 0.2 0.2 0.5 1.6 1.5
<pre>/kWh (nominal)</pre>	Base Year 2011/12 0.1 0.6 0.3 1.3 1.4 0.2	Current Year 2012/13 0.2 0.6 0.5 1.6 1.5 1.3	Projection 2013/14 0.2 0.2 0.5 1.5 1.5 1.6	Projection 2014/15 0.2 0.2 0.5 1.6 1.5 1.6
c/kWh (nominal)	Base Year 2011/12 0.1 0.6 0.3 1.3 1.4 0.2 11.9	Current Year 2012/13 0.2 0.6 0.5 1.6 1.5 1.5 1.3 11.8	Projection 2013/14 0.2 0.2 0.5 1.5 1.5 1.5 1.6 11.5	Projection 2014/15 0.2 0.2 0.5 1.6 1.5 1.6 1.9
c/kWh (nominal)	Base Year 2011/12 0.1 0.6 0.3 1.3 1.4 0.2 11.9 2.2	Current Year 2012/13 0.2 0.6 0.5 1.6 1.5 1.3 1.3 11.8 3.6	Projection 2013/14 0.2 0.2 0.5 1.5 1.5 1.6 11.5 3.8	Projection 2014/15 0.2 0.2 0.5 1.6 1.5 1.6 1.5 1.6 11.9 4.1
c/kWh (nominal)	Base Year 2011/12 0.1 0.6 0.3 1.3 1.4 0.2 11.9 2.2	Current Year 2012/13 0.2 0.6 0.5 1.6 1.5 1.3 11.8 3.6 2.0	Projection 2013/14 0.2 0.2 0.5 1.5 1.5 1.6 11.5 3.8 2.1	Projection 2014/15 0.2 0.2 0.5 1.6 1.5 1.6 1.5 1.6 11.9 4.1 2.3

### Figure 3.5 New South Wales - residential electricity prices trends from 2011/12 to 2014/15

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

# Figure 3.6 New South Wales - summary of price movements by component from 2011/12 to 2014/15

New South Wales	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	64%	7%	1.9	34%
Distribution component	8%	1%	1.3	24%
Wholesale energy component	29%	-1%	2.0	35%
Retail component	13%	-2%	0.3	6%
Total	20%	1%	5.5	100%

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

### 3.3.3 Transmission network component

### Results

Between 2011/12 and 2012/13, the transmission network component increased by 64 per cent (1.4 c/kWh) in nominal terms. This contributed 28 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average by seven per cent per year. This equates to a total increase in this component of 0.5 c/kWh. This is equal to the total estimated increase of 0.5 c/kWh across all components over this remaining period.

### Background

The current regulatory control period for TransGrid commenced on 1 July 2009 and runs until 30 June 2014.

The AER's final determination approved an increase in capital expenditure over the period to allow further investment in the New South Wales transmission framework to:

- augment the network to accommodate the growth in maximum demand for energy that was anticipated at the time;
- replace ageing assets, including the rising price of electricity transmission equipment, and a forecasted growth in wages; and
- improve network security and reliability, including TransGrid's planning obligations to meet the N-1 licence obligations placed on the New South Wales distribution network service providers.<sup>97</sup>

The AER also approved an indicative contingent projects allowance of \$1.8 billion, for six new contingent projects, including a Sydney central business district supply project and Queensland and Victoria interconnector development projects.<sup>98</sup>

Australian Energy Regulator, *TransGrid transmission determination 2009/10-2013/14*, Final decision, 28 April 2009. See also TransGrid, *Revised revenue proposal 1 July 2009-30 June 2014*, January 2009 at page 12.

Following an appeal to the Australian Competition Tribunal (Tribunal), TransGrid's determination was varied on November 2009 to allow for an increase in the maximum allowed revenue over the regulatory control period. The AER noted that this increase was based on an increase in the rate of return of about 1.1 per cent<sup>99</sup> and an increase in the controllable operating expenditure allowance of \$14 million compared to the previous regulatory control period. The maximum allowed revenue for the total period was increased from \$3.6 to \$4 million, a nominal increase of \$381 million.<sup>100</sup>

Along with the New South Wales distribution networks, TransGrid has put forward a proposal to the New South Wales government to cap transmission price increases at or below CPI over the next six years. This has included reviewing forward investment priorities over the next regulatory control period (2014/15-2018/19) and identifying savings from efficiencies and avoidable capital expenditure.<sup>101</sup>

The next regulatory period for TransGrid commences on 1 July 2014 and the new determination will be made under the new network regulation rules following the AEMC's recent network regulation rule determination.<sup>102</sup>

 <sup>&</sup>lt;sup>98</sup> Australian Energy Regulator, *TransGrid transmission determination 2009/10-2013/14*, Final decision, 28 April 2009 at page xi.

<sup>&</sup>lt;sup>99</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: ten per cent approved for 2009-2014, compared to 8.9 per cent approved previously: Australian Energy Regulator, *Statement on updates to TransGrid transmission determination*, March 2010.

<sup>100</sup> Ibid.

<sup>&</sup>lt;sup>101</sup> New South Wales Government, Media release, 7 November 2012, at www.trade.nsw.gov.au.

<sup>102</sup> Australian Energy Market Commission, National Electricity Amendment (Economic regulation of network providers) Rule 2012, National Gas Amendment (Price and revenue regulation of gas services) Rule 2012, Rule determination, 29 November 2012.

### Box 3.4: Network use of system costs in New South Wales

In New South Wales the AEMC has modelled the network price charged to retailers for residential customers to increase by 13 per cent from 2011/12 to 2014/15. The distribution businesses report the prices they charge for transmission and distribution separately to the AER. It is this separate price that the AEMC use to model the transmission and distribution charges to customers in this report.

The results for New South Wales are heavily influenced by the pricing strategy adopted by Ausgrid for 2012/13. In 2012/13 Ausgrid moved to a standing charge and three block variable price as set out in Table 3.1.

	Transmission charge (c/kWh)	Distribution charge (c/kWh)	Combined network charge (c/kWh)
Standing Charge (c/day)	0.0	38.0	38.0
Block 1 (0 to 1000 KWh per 91 days)	0.2000	12.4000	12.6
Block 2 (1000+ to less than 2000 KWh per 91 days)	12.2156	2.7844	15.0
Block 3 (2000 KWh or more per 91 days)	15.5000	3.5000	19.0

Table 3.1Ausgrid pricing strategy for 2012/13

The network price used in the AEMC's modelling is a residential inclining block tariff. This means that if a customer consumes electricity above a certain pre-determined level, then the price per kWh changes.

As can be seen from Table 3.1, if a customer consumes more than 1000 kWh per 91 days then the network price for an additional kWh rises from 12.6 c/kWh to 15 c/kWh. Moreover, as consumption levels rise through the price blocks, the distribution price for an extra kWh falls but is more than offset by increases in the transmission price to produce an inclining network price.

Customer consumption also becomes more volatile in higher blocks compared to the lower blocks. A representative customer in New South Wales uses 7,000 kWh per year, or on average 1,750 KWh per 91 days. As shown in Table 3.1, if customers were to decrease their consumption by any amount less than 750 KWh per 91 days, it would impact on the revenue recovered by the transmission network in price block two but would not affect the revenue recovered in price block one.

In 2012/13 Ausgrid changed the structure of its price to introduce a third price block. Figure 3.7 compares Ausgrid's network price structure for 2011/12 and 2012/13.



As can be seen in Figure 3.7, with the exception of consumption between 1,750 kWh and 2,000 kWh per quarter, prices per kWh have increased.

Table 3.1 shows that the Ausgrid pricing structure recovers more of its distribution price in the more-stable-over-time, lower consumption blocks and more of its transmission price in the more volatile, higher consumption blocks: see Appendix B for more detail.

New South Wales distribution network prices are set using a weighted average price control. This sets an overall ceiling for revenues but allows the distributors some flexibility in setting their individual tariffs. If consumption volumes fall, distribution revenue also falls.

Transmission businesses charge distribution businesses for transmission services in accordance with the AER's regulatory determination. Distribution businesses recover this charge from customers.

The transmission prices, as recovered by distribution businesses, must still remain within the revenue cap set by the AER: this means that if consumption falls then prices can be increased in a subsequent year to recover the short fall of revenue. The revenue cap applies to all transmission revenue and is not specific to a customer type. This means that if the amount of revenue from a particular customer type is increased then there would be expected to be less revenue collected from other customer types.

The Ausgrid strategy reduces the risk of distribution revenue loss to Ausgrid without changing the overall revenue that the distribution business is allowed to earn. This strategy means that if electricity demand is unexpectedly below forecast demand across residential customers then it is likely to impact on transmission revenues more than distribution revenues, and any transmission shortfall will be recovered from retailers in subsequent years. As retailers pass network costs onto customers, this has the effect of transferring additional volume risk to residential customers in the Ausgrid region. Importantly, Ausgrid's strategy does not change the level of revenue that TransGrid can

earn under its approved revenue cap.

The pricing structure also results in a percentage increase in the representative residential price for transmission in the Ausgrid region being reflective of the percentage increases in revenue allowed by the AER to TransGrid.

From 2011/12 to 2012/13, taking in to account the proportions of consumption in each price block provided by the AER, the AEMC calculates a price increase in the Ausgrid region of 102 per cent, while in the same time period the revenue increase for TransGrid was 5.6 per cent plus inflation. The Ausgrid increase is mostly offset in the calculated distribution prices for the representative residential customer, where prices fall by 0.5 per cent when Ausgrid's weighted average distribution prices rise by 18.18 per cent.

### 3.3.4 Distribution network component

### Results

Between 2011/12 and 2012/13, the distribution network component, including the New South Wales Climate Change Fund levy, increased by eight per cent (0.9 c/kWh) in nominal terms. This contributed 19 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average by one per cent per year. This equates to a total increase in this component of 0.4 c/kWh. This compares with the total estimated increase of 0.5 c/kWh across all components over this remaining period.

### Background

The current regulatory control period for the New South Wales distribution network businesses commenced on 1 July 2009 and runs until 30 June 2014.

The current distribution determinations for the New South Wales distribution businesses were the first made by the AER for these networks, and were made under provisions set out in the transitional chapter 6 rules. These provisions incorporate key aspects of the general chapter 6 rules, but also locked in certain aspects of the previous determinations made by IPART.

In its final decision, the AER stated that there would be a material increase in network investment in New South Wales over the regulatory control period. This was to improve network security and reliability of supply, in line with the (then) new licence obligations imposed by the New South Wales Government. Increases were also approved to augment the networks to accommodate the projected growth in maximum demand for energy and replace ageing assets.

The AER's final decision indicates that the 2009/10 price increases<sup>103</sup> were constrained in recognition of the weaker economic outlook at the time. The decision also recognised

<sup>&</sup>lt;sup>103</sup> This was the first year of the current distribution network regulatory control period.

that higher price increases in subsequent years would compensate for the revenue foregone in the initial year.  $^{104}\,$ 

Following successful appeals to the Tribunal, the AER's final determinations were varied by adjusting the allowed rates of return for each of the New South Wales distributors and the operating expenditure allowance for Ausgrid.<sup>105</sup>

Taking into account the Tribunal decision, the current determinations provide for increases in the rates of return for the New South Wales distributors of between 0.7 and 1.9 per cent, compared to the previous regulatory control period.<sup>106</sup>

The current regulatory control period ends on 30 June 2014. The AER has commenced its process to make a new determination for the next five year period, which will be made under the new network regulation rules following the AEMC's recent network regulation rule determination.<sup>107</sup> The AER has proposed a change to the form of control from the weighted average price cap, which currently applies to New South Wales distribution businesses, to a revenue cap for standard control services.<sup>108</sup>

As with TransGrid, Networks NSW has put forward a proposal to the New South Wales government to cap distribution price increases at or below CPI over the next six years. This has included reviewing forward investment priorities over the next regulatory control period (2014/15 - 2018/19) and identifying savings from efficiencies and avoidable capital expenditure.<sup>109</sup>

### Solar Bonus Scheme/Climate Change Fund

The New South Wales Solar Bonus Scheme commenced on 1 January 2010 and operates until 31 December 2016. The scheme is now closed to new participants. Existing eligible participants will continue to receive either 60c or 20c, depending on when they entered the scheme, per kWh of generation exported to the grid.

Networks commenced making the required payments to customers from the scheme start, but recovery of these scheme costs by the networks did not commence until 2011/12 through the Climate Change Fund. This is an existing levy on distribution network customers set by the New South Wales Government and passed through the network price.

Australian Energy Regulator, NSW distribution determination 2009/10 - 2013/14, 28 April 2009, at page xi.

<sup>105</sup> Australian Energy Regulator, Statement on updates for NSW DNSPs distribution determination, 25 November 2009.

<sup>106</sup> IPART, NSW Electricity distribution pricing 2004/05 to 2008/09, Final report, at page 61. This is based on the difference in the approved nominal vanilla weighted average cost of capital: ten per cent approved for 2009-2014, compared to around 8.8 per cent approved previously: Australian Energy Regulator, Statement on updates for NSW DNSPs distribution determination, at page 2.

<sup>107</sup> Australian Energy Market Commission, National Electricity Amendment (Economic regulation of network providers) Rule 2012, National Gas Amendment (Price and revenue regulation of gas services) Rule 2012, Rule determination, 29 November 2012.

<sup>108</sup> Australian Energy Regulator, Framework and approach paper - Ausgrid, Endeavour Energy and Essential Energy - Regulatory control period commencing 1 July 2014, Preliminary positions, June 2012.

<sup>&</sup>lt;sup>109</sup> New South Wales Government, Media release, 7 November 2012, at www.trade.nsw.gov.au.

To ensure recovery of previously unrecovered costs, as well as the anticipated increases in scheme costs due to high customer uptake,<sup>110</sup> the total annual levy for the Climate Change Fund was increased from \$150 million to \$250 million for 2012/13.<sup>111</sup> The New South Wales budget currently estimates the total annual contributions from 2013/14 to 2016/17 to be \$309 million. This figure takes into account the more recent decision to also require retailers to contribute the costs of the scheme.

As it is not possible to separate out the feed-in tariff costs from the remainder of the Climate Change levy, this report has estimated the costs of the total levy.<sup>112</sup> The cost impact of the Climate Change Fund levy increases between the base year 2011/12 and 2012/13, reflecting the recouping of previously under-recovered costs from the initial years of the scheme as discussed above.

It is estimated that the levy will add an additional 1.6 c/kWh to the distribution network component in 2013/14 and 2014/15. This reflects in part the continuation of high recoveries required under the scheme until it terminates in 2016.<sup>113</sup>

### 3.3.5 Wholesale energy component

### Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by 29 per cent (2.2 c/kWh) in nominal terms. This contributed 44 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, on average, by one per cent per year. This equates to a total decrease in this component of 0.2 c/kWh. This compares with the total estimated increase of 0.5 c/kWh across all components over this remaining period.

### Background

In the current determination period, estimates resulting from both the LRMC and market cost based modelling for wholesale energy were considered by IPART. IPART utilised the higher of the two values in the cost build-up for setting the regulated price in New South Wales. The increase in total wholesale energy costs for 2012/13 compared to the previous year, including the impact of the carbon price, largely reflected the introduction of the carbon price.<sup>114</sup>

<sup>110</sup> *NSW Budget 2012/13,* Budget paper 2, chapter 5 at page 15.

<sup>111</sup> NSW Budget 2011/12, Budget paper 2, chapter 5 at page 3.

<sup>&</sup>lt;sup>112</sup> Calculation of the levy assumes that the recovery is spread evenly across the network customer base throughout the 2011/12 - 2014/15 period.

<sup>113</sup> While the modelling of this item in this report is based on available information from various IPART and New South Wales Treasury budget papers, this levy is set annually by the New South Wales Government. in line with the broader purpose of this fund, cost recovery is not limited to costs under the Solar Bonus Scheme.

<sup>&</sup>lt;sup>114</sup> Independent Pricing and Regulatory Tribunal, *Changes in the regulated electricity retail prices from* 1 July 2012, Final report.

The results from the Frontier modelling of stand-alone LRMC for New South Wales show a relatively higher wholesale energy component compared to other states.<sup>115</sup> This reflects:

- a peakier load shape in parts of New South Wales which requires more peaking plant to service, resulting in higher costs; and
- the higher fuel costs in New South Wales relative to other jurisdictions which means that generating electricity to meet given load shape will be more expensive.

The changes in the modelled results are relatively moderate as changes are driven by the underlying assumptions used. The small decrease in the stand-alone LRMC reflects the assumptions that the residential load shapes used remain constant throughout the modelled period and small decreases in the assumed gas prices have a larger effect than increases in the carbon price.<sup>116</sup>

Under new terms of reference received in September 2012, IPART is currently considering a new methodology for determining the energy purchase cost allowance for regulated prices for the 2013/14 - 2015/16 period. The new terms of reference specify that the energy purchase cost allowance must be set no lower than the weighted average of the LRMC (75 per cent) and market based (25 per cent) approaches: "A key objective of changing the energy costs methodology is to place some downward pressure on regulated retail electricity prices."<sup>117</sup>

IPART has released a number of papers for consultation including the methodology, and a final decision is expected to be published in May 2013.

AEMO has indicated that annual energy demand in New South Wales (including the Australian Capital Territory), is expected to decrease in 2012/13 from original forecasts published in the original 2011 ESOO (medium economic growth scenario). Summer maximum demand has also been lower than forecast in 2011.<sup>118</sup>

Contributory factors for the decreases in the annual energy and maximum demand forecasts include the reduced demand from large manufacturing and industrial users, in particular the (then) expected closure of Norsk Hydro's aluminium smelter at Kurri Kurri,<sup>119</sup> increasing penetration of solar rooftop panels lower than forecast economic growth and consumer response to rising electricity prices and energy efficiency measures.<sup>120</sup>

<sup>115</sup> Frontier Economics, Possible future retail electricity price movements, December 2012 at pages 26-29. 116 Ibid.

<sup>117</sup> Independent Pricing and Regulatory Tribunal, Terms of reference - review of regulated electricity retail tariffs and charges 2013 to 2016, 27 September 2012.

<sup>118</sup> Australian Energy Market Operator, 2012 National electricity forecasting report, 2012, page 4-1.

<sup>119</sup> Closure and cessation of all production at this plant occurred in late 2012. Difficulties were attributed to a combination of low metal prices and uncertain market outlook with an over capacity in aluminium production, coupled with the strong Australian dollar: Norsk Hydro ASA, Press release, 5 June 2012.

<sup>120</sup> Australian Energy Market Operator, 2012 National electricity forecasting report, 2012, page 4-1, 4-2.

These factors may have a greater impact on demand and wholesale prices in the New South Wales market than modelled in this report.

### Carbon price

The introduction of the Commonwealth Government's carbon pricing mechanism on 1 July 2012 is estimated to add around two c/kWh annually to the wholesale energy component from 2012/13 until 2014/15. This reflects the general stability of the wholesale energy component with incremental increases in the impact of the carbon price until 2014/15.

## 3.3.6 Retail component

### Results

Between 2011/12 and 2012/13, the retail component, including the retail environmental scheme obligations, increased by 13 per cent (0.5 c/kWh) in nominal terms. This contributed ten per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, on average, by two per cent per year. This equates to a total decrease in this component of 0.1 c/kWh. This compares with the total estimated increase of 0.5 c/kWh across all components over this remaining period.

### Background

A margin of 5.4 per cent over total retailer costs was applied by IPART for the 2012/13 retail regulatory period. This margin was applied by the AEMC in its retail estimations for 2013/14 and 2014/15.

## Enhanced Renewable Energy Target

The LRET is estimated to add an additional 0.5 c/kWh annually to the retail component from 2012/13, and remain fairly stable until the end of the period. The retail costs of complying with the LRET are expected to generally increase over the period, primarily due to a higher target specified in the legislation and a higher estimated certificate cost.<sup>121</sup>

The SRES adds an additional 0.6 c/kWh to the retail component in 2011/12, but this decreases to 0.2 c/kWh in the final two years of the period. This decrease is attributable to the general reduction in feed-in tariffs paid to new participants under the various jurisdictional schemes, and cessation of the Solar Credits multiplier on 1 January 2013.

## New South Wales Energy Savings Scheme

Frontier's modelling is based on the penalty price as a proxy for the retail costs of compliance.<sup>122</sup> These costs are shown to increase as the scheme target increases, adding around 0.2 c/kWh annually to the retail component for New South Wales from 2013/14 to 2014/15.

<sup>&</sup>lt;sup>121</sup> Independent Pricing and Regulatory Tribunal, *Changes in the regulated electricity retail prices from 1 July 2012,* Final report at page 38.

<sup>122</sup> Frontier Economics, *Possible future retail electricity price movements*, December 2012 at pages 73-75.

This scheme commenced in 2009 and established annual energy savings targets that retailers and other scheme participants are obliged to meet through the creation and surrender of certificates. The energy savings target for scheme participants is based on the size of their share of the electricity market.

### 3.4 Australian Capital Territory

### 3.4.1 General

Full retail competition was introduced to the Australian Capital Territory in July 2003, but regulated prices have been retained for 'franchise' customers.<sup>123</sup> These prices are regulated by the Independent Competition and Regulatory Commission (ICRC). Currently around 80 per cent of residential customers in the Australian Capital Territory remain on regulated prices.<sup>124</sup>

The ICRC determines regulated prices on the basis of estimating the efficient costs of an incumbent electricity retailer servicing the regulated customer base. This is, in turn, based on a cost build up which passes through cost items that are regulated by other bodies, such as network costs, or which are not within the control of the retailer, provided they pass a materiality threshold. Price changes are managed via an index based approach based on year-on-year changes to the individual cost components.<sup>125</sup>

### 3.4.2 Trends in the Australian Capital Territory regulated retail electricity prices

### Box 3.5: Key points for the Australian Capital Territory

From 2011/12 to 2012/13, regulated prices in the Australian Capital Territory rose nominally by 13 per cent. This is equivalent to an increase of 2.2 c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will increase at an average annual rate of three per cent This is equivalent to a total nominal increase of 1.2 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, change to the distribution network component is the main driver of overall change to the regulated retail price in the Australian Capital Territory.

<sup>&</sup>lt;sup>123</sup> 'Franchise customers' refers to those customers not receiving electricity supply on market contracts.

<sup>&</sup>lt;sup>124</sup> From information provided by the ICRC, based on 2010/11 data.

<sup>&</sup>lt;sup>125</sup> Independent Competition and Regulatory Commission, *Retail prices for franchise electricity customers* 2012-14, report 4 of 2012, Final report, June 2012 at page 17.

### Figure 3.8 Australian Capital Territory at a glance

AUSTRALIAN CAPITAL TERRITORY	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service Providers (TNSPs)	TransGrid	NSW Government	Yes - regulated by Australian Energy Regulator (AER)	1 July 2009 - 30 June 2014	-
Distribution Network Service Providers (DNSPs)	ActewAGL	50:50 JV	Yes - regulated by Australian Energy	1 July 2009 -	ACT electricity feed-in scheme
	ACT governme private owners	ACT government/ private ownership	/ Regulator (AER)	30 June 2014	
Host retailers <sup>a</sup>	ActewAGL 50:50 JV ACT government/ private ownership	Standard retail tariffs are regulated	1 July 2012 -	Carbon price (via the wholesale energy price)	
		ACT government/	by Independent Competition and Regulatory Commission (ICRC)	30 Jun 2014	<ul> <li>Large scale Renewable Energy Target (LRET)</li> </ul>
		private ownership		(annual adjustments	Small scale Renewable Energy Scheme (SRES)
				where appropriate)	Energy Efficiency Improvement Scheme (EEIS)
Residential customers <sup>b</sup>	Total	146,739			
Typical residential consumption levels <sup>c</sup>	8,156kWh				
Typical household consumption <sup>d</sup>	1 person household	5,939kWh			
	2 person household	7,219kWh			
	3 person household	8,500kWh			
	4 person household	9,780kWh			

Sources: Independent Competition and Regulatory Commission (ICRC), Electricity Supply Association of Australia (ESAA), Australian Energy Regulator (AER).

a. From AER, State of the energy market 2012, at page 120. Data current as at October 2012.

b. From information provided by the ICRC.

c. From information provided by the ICRC.

d. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

# Figure 3.9 Australian Capital Territory - residential electricity price trends from 2011/12 to 2014/15



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

# Figure 3.10 Australian Capital Territory - summary of price movements by component from 2011/12 to 2015

Australian Capital Territory	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	20%	7%	0.5	15%
Distribution component	5%	8%	1.4	41%
Wholesale energy component	27%	-1%	1.5	44%
Retail component	-1%	0%	0.0	0%
Total	13%	3%	3.3	100%

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

### 3.4.3 Transmission network component

### Results

Between 2011/12 and 2012/13, the transmission network component increased by 20 per cent (0.3 c/kWh) in nominal terms. This contributed 13 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by seven per cent per year. This equates to a total increase in this component of 0.2 c/kWh. This compares with the total estimated increase of 1.2 c/kWh across all components over this remaining period.

### Background

The Australian Capital Territory is serviced by TransGrid. The difference in the impact of this component to the regional price in the Australian Capital Territory, compared to New South Wales, reflects differences in the methodology adopted by ActewAGL to recover transmission charges from those adopted by Ausgrid in New South Wales.<sup>126</sup>

### 3.4.4 Distribution network component

### Results

Between 2011/12 and 2012/13, the distribution network component, including the feed-in tariff, increased by five per cent (0.3 c/kWh) in nominal terms. This contributed 15 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by eight per cent per year. This equates to a total increase in this component of one c/kWh. This compares with the total estimated increase of 1.2 c/kWh across all components over this remaining period.

### Background

The current regulatory control period for ActewAGL commenced on 1 July 2009 and runs until 30 June 2014.

The current distribution determination for ActewAGL for the 2009 – 2014 regulatory control period is the first made by the AER for this network. It was made under provisions set out in Appendix 1 of the National Electricity Rules, the transitional chapter 6 rules. These rules incorporate key aspects of the general chapter 6 rules, but also lock in certain aspects of the previous determination made by the ICRC.<sup>127</sup>

In its final decision, the AER noted that the current network determination allows for increases to network investment. Specifically it allows for the replacement of ageing network assets, several major capital projects and construction of new assets to improve security of supply. Other drivers in the current regulatory control period include the introduction of the Australian Capital Territory Government's feed-in tariff scheme,

<sup>126</sup> See the discussion regarding the New South Wales transmission network component in section 3.3.3 for further discussion on this point.

<sup>127</sup> Australian Energy Regulator, *Australian Capital Territory distribution determination* 2009/10 to 2013/14, Final decision, 28 April 2009.

and additional information technology (IT) and metering costs relating to the scheme. Details of these costs are provided below.  $^{128}$ 

The current determination provides for an increase in the rate of return of about 0.3 per cent compared to the previous regulatory control period.<sup>129</sup>

The next regulatory control period for ActewAGL commences on 1 July 2014 and the new determination will be made under the new network regulation rules following the AEMC's recent network regulation rule determination.<sup>130</sup>

### Feed-in tariff

The impact of the feed-in tariff on the network component is estimated to increase from an additional 0.3 c/kWh in 2011/12 to 0.5 c/kWh in 2013/14 and 2014/15.

The Australian Capital Territory Government introduced a gross feed-in tariff in March 2009. This offered owners of micro renewable energy generators, solar or wind, 50.05 c/kWh for installations of a listed capacity of no more than 10 kW, and 80 per cent of that amount or 40.04 cents for installations with a capacity between 10kW and 30kW, from 1 March 2009 until 30 June 2010. Payments under this scheme extend out to 2031 for eligible customers.

The scheme underwent several major changes before closing to new customers in 2011:

- the micro-generator<sup>131</sup> category of the feed-in tariff scheme was closed on 31 May 2011;
- the scheme was re-opened to micro-generators by allowing them to access the scheme cap originally set aside for medium-generators<sup>132</sup> on 12 July 2011; and
- the scheme was finally closed to both micro and medium-generators at midnight 13 July 2011, following overwhelming demand.

The current distribution network determination allows for \$0.3 million to prepare ActewAGL's IT systems for the Australian Capital Territory's feed-in tariff. A further \$2.7 million was allowed to install new specialised metering equipment needed under the scheme.<sup>133</sup>

In its final decision the AER noted that costs relating to this scheme were a major driver of increases to the operational expenditure allowance from the draft decision, and are recovered via a nominated pass-through event. Any adjustments for over and under

Australian Energy Regulator, ACT distribution determination 2009/10-2013/14, Final decision, 28 April 2009, at page vii.

<sup>&</sup>lt;sup>128</sup> Ibid, at page vii.

<sup>&</sup>lt;sup>129</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: 8.8 per cent approved for 2009-2014, compared to 8.5 per cent approved previously: Independent Competition and Regulatory Commission, *Investigation in to prices for electricity distribution services in the ACT 2004/04-2008/09*, Final decision, March 2004; Australian Energy Regulator, *ACT distribution determination 2009/10-2013/14*, Final decision, 28 April 2009.

<sup>130</sup> Australian Energy Market Commission, National Electricity Amendment (Economic regulation of network providers) Rule 2012, National Gas Amendment (Price and revenue regulation of gas services) Rule 2012, Rule determination, 29 November 2012.

<sup>&</sup>lt;sup>131</sup> This covered generators of less than 30kW capacity.

<sup>132</sup> This covered generators of between 30kW – 30MW capacity.
recoveries of direct payments under the feed-in tariff scheme will be treated as an approved pass-through during this regulatory period. This means that, should an additional adjustment be necessary there may be a step change in the cost recovery for this scheme in future years.<sup>134</sup>

On 10 January 2013 the AER made a determination in relation to a cost pass-through application by ActewAGL in relation to feed-in tariffs. The AER approved a decrease of \$727 500 (five per cent) from the initial determination referred to above, for the 2011/12 year. The determination indicates that this decrease in costs is expected to be passed on to customers in subsequent years.<sup>135</sup>

A further determination was also made in relation to another cost pass-through application by ActewAGL, this time relating to costs for the National Energy Customer Framework. This approves a cost pass-through of almost \$2 million for the 2013/14 regulatory year.<sup>136</sup>

As the modelling underlying this report was completed by late 2012, it has not included the outcome of these determinations.

### 3.4.5 Wholesale energy component

#### Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by 27 per cent (1.6 c/kWh) in nominal terms. This contributed 73 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, on average, by one per cent per year. This equates to a total decrease in this component of 0.1 c/kWh. This compares with the total estimated increase of 1.2 c/kWh across all components over this remaining period.

#### Background

The fall in wholesale prices after 2012/13 shown in the modelling is a result of using the market based approach to estimate this component. It reflects the general trend towards lower spot prices assumed in the Frontier modelling. These prices are expected to recover slightly in 2014/15 reflecting slightly higher demand, a tighter supply-demand balance and a small increase in input costs.<sup>137</sup>

<sup>&</sup>lt;sup>134</sup> Ibid, at pages 130-131.

<sup>&</sup>lt;sup>135</sup> Australian Energy Regulator, *ACT application for cost pass-through in relation to feed-in tariffs,* Determination, January 2013.

<sup>&</sup>lt;sup>136</sup> Australian Energy Regulator, *Application for cost pass-through for the National Energy Customer Framework,* Determination, January 2013.

<sup>&</sup>lt;sup>137</sup> Frontier Economics, *Possible future retail electricity price movements*, Final report, December 2012 at page 38.

In its final report for retail prices for 2012 -2014, the ICRC readjusted its wholesale energy modelling to take account of perceived changes in the forms of trading in electricity futures.<sup>138</sup>

In previous determinations the ICRC used data from the Australian Securities Exchange (ASX) as a proxy for over-the-counter contract prices. This was due to the perceived lack of transparency in these prices at the time. The use of this proxy was based on the assumption that arbitrage between the two markets would ensure that the ASX futures prices are reflective of over-the-counter contract prices. Nevertheless, the ICRC noted that the uncertainty in recent years regarding the introduction of the carbon price had fundamentally affected the contract market. This led to a change in the underlying assumption that these could be compared on a like-for-like basis.

On the basis of analysis that the use of the ASX data would likely underestimate the retail energy purchase costs, the ICRC adopted data provided by the trading broker ICAP Energy Australia. The ICRC also noted its preference to use ASX data and that it would consider returning to this where possible in future determinations.<sup>139</sup>

The Australian Capital Territory is located within the New South Wales NEM region: the factors identified in section 3.3.5 in relation to the New South Wales wholesale energy component are therefore also relevant to the Australian Capital Territory.

#### Carbon price

The impact of a carbon price from 2012/13 is estimated to add just over two c/kWh annually to the wholesale energy component over the remainder of the period.

The high impact of the carbon price compared to the wholesale energy component, and relative to other jurisdictions, reflects the market based approach used for modelling the Australian Capital Territory and the higher carbon pass-through rates assumed under this modelling. This is because higher emissions intensive coal - fired generation is marginal for a greater proportion of the time, due to the looser supply-demand balance described in relation to wholesale energy prices.<sup>140</sup>

The ICRC applied a carbon cost of 2.1 c/kWh for 2012/2013. This was based on an average NEM emissions intensity factor of 0.92 for the 2011/12 period, and the legislated carbon reference price.<sup>141</sup>

<sup>&</sup>lt;sup>138</sup> Independent Competition and Regulatory Commission, *Draft electricity pricing decision*, Media statement, 5 April 2012.

<sup>&</sup>lt;sup>139</sup> Independent Competition and Regulatory Authority, *Retail prices for franchise electricity customers* 2012-14, Final report, June 2012, at pages 6-11.

<sup>&</sup>lt;sup>140</sup> Frontier Economics, *Possible future retail electricity price movements*, Final report, December 2012 at pages 53, 54.

<sup>&</sup>lt;sup>141</sup> Independent Competition and Regulatory Authority, *Retail prices for franchise electricity customers* 2012-14, Final report, June 2012, at page 22.

### 3.4.6 Retail component

#### Results

Between 2011/12 and 2012/13, the retail component, including the retail environmental scheme obligations, decreased by one per cent in nominal terms. This had an immaterial impact on the regulated residential electricity price over that year.

From 2012/13 to 2014/15, it is estimated that changes in this component will continue to have an immaterial impact on the regulated residential electricity price. This compares with the total estimated increase of 1.2 c/kWh across all components over this remaining period.

### Background

The approach of the ICRC has generally been to adopt an index based approach in making price adjustments for regulated prices. This is based on benchmark cost information drawn from the marketplace and other retail determinations that have been undertaken, as well as information that has been provided by the incumbent retailer, ActewAGL.<sup>142</sup>

In the current retail price determination, the ICRC did not include an allowance for customer acquisition and retention costs in the retail operating costs allowance. This was because the ICRC considered it inappropriate to include this primarily due to its consideration that an incumbent rather than a new entrant is the relevant regulatory benchmark for the Australian Capital Territory.<sup>143</sup>

In its 2012–14 final decision, the ICRC retained the existing retail margin of 5.4 per cent which was applied in the previous period. The AEMC has applied this margin in estimating the retail margin in its modelling.<sup>144</sup>

# Enhanced Renewable Energy Target

The LRET added an additional 0.5 c/kWh annually to the retail component in 2011/12 and is estimated to remain around this level until 2014/15.

The SRES added an additional 0.8 c/kWh to the retail component in 2011/12, but this is estimated to decrease to 0.3 c/kWh by 2014/15. This is attributed to the general reduction in feed-in tariffs paid to new participants under the various jurisdictional schemes, and cessation of the Solar Credits multiplier on 1 January 2013.

The ICRC based its estimation of the price of certificates for both the LRET and the SRES on the average prices of the certificates in the previous financial year. It also included an explicit allowance of ten per cent to cover holding costs, which are the costs the retailer incurs in holding the certificates up to the date of their surrender.

<sup>&</sup>lt;sup>142</sup> Independent Competition and Regulatory Authority, *Retail prices for franchise electricity customers* 2012-14, Final report, June 2012.

<sup>143</sup> Ibid, at page 6. These costs are included in the New South Wales, Queensland and South Australian jurisdictions, as regulators in those jurisdictions have adopted an approach that is based on the efficient costs for a new entrant retailer.

<sup>&</sup>lt;sup>144</sup> Ibid, at page 6.

#### Energy Efficiency Improvements Scheme

This scheme is non-certificate based. It is based on the South Australian Residential Energy Efficiency scheme. It commenced on 1 January 2013 and imposes an obligation on electricity suppliers to install energy efficient products or undertake energy savings activities, or make an energy savings contribution.

Frontier's modelling uses the energy savings contribution as a proxy for the cost of compliance, and shows that this scheme adds 0.1 c/kWh after the commencement date, increasing to 0.3 c/kWh in 2013/14, and 0.4 c/kWh in 2014/15. This increase is attributable to increases of the Energy Savings Target from 7.2 per cent in 2012/13 to 13.1 per cent in 2013/14, and 13.6 per cent in 2014/15.<sup>145</sup>

In its recent determination the ICRC stated that it would include an adjustment mechanism in subsequent years to account for differences in actual and estimated costs for the scheme. Noting that there might be insufficient information to accurately assess costs for the 2013/14 period, the ICRC has indicated that an adjustment might be made in the 2014/15 determination. This means that, should this adjustment be realised, there might be a need for additional recovery in the 2014/15 period.<sup>146</sup>

<sup>&</sup>lt;sup>145</sup> Frontier Economics, *Possible future retail electricity price movements*, Final report, December 2012 at pages 78, 79. These are percentages of a retailer's total energy sales for the relevant compliance year.

<sup>&</sup>lt;sup>146</sup> Independent Competition and Regulatory Authority, *Retail prices for franchise electricity customers* 2012-14, Final report, June 2012, at page 29.

<sup>60</sup> Possible future retail electricity price movements: 1 July 2012 to 30 June 2015

### 3.5 Victorian summary

#### 3.5.1 General

# Box 3.6: Note regarding the modelling of retail electricity prices in Victoria

While it is possible to ascertain the standing offer price published by a retailer in Victoria, determining the components that make up that price is less straight forward. Certain components, specifically the transmission and distribution network components, may be reasonably estimated via modelling and publicly available information, but the balance of the price is considered to be residual. This compares to regulated prices where the relative proportions of each component, where determined by an independent regulator, can be easily identified.

In last year's report the value remaining of the retail price, after the network and modelled wholesale energy components were identified and deducted, was labelled as the retail component.

This year, the wholesale and retail components are grouped as a combined retail and wholesale component. This approach recognises that:

- the split between the modelled wholesale energy and retail components is not transparent compared to jurisdictions that have retained price regulation; and
- there is a clear and transparent distinction between the regulated components (network components) and the non-regulated components (wholesale energy and retail components).

Estimations of retail electricity price movements for Victoria in this report are based on published standing offers which tend to overstate the actual prices paid by the majority of customers that are receiving supply on market offers.

Recognising that market offers were not used in the analysis of other jurisdictions, the use of standing offer data in this report maintains a level of consistency with this approach. In relation to the results of the analysis for Victoria:

- Data regarding the ratio of residential customers that receive electricity supply on market offer prices compared to standing offer prices is not actively collected in Victoria, but it is understood that currently around 75 per cent of total Victorian residential customers are on market offers.<sup>147</sup>
- A recent review by the Essential Services Commission of Victoria (ESCV) estimates that there is a 12 per cent differential between market and standing offers: that is, customers could save, on average, around 12 per cent by switching from a standing offer to a fully discounted market

<sup>&</sup>lt;sup>147</sup> Estimation provided by the Department of Primary Industries.

offer. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh to an average market offer price of 25.7 c/kWh.  $^{148}$ 

Victoria is the only jurisdiction to have removed all retail electricity price controls prior to the current year.<sup>149</sup> The ESCV monitors licence compliance and retail performance, but does not regulate prices in sense of setting a regulated retail price for any class of customers. All retailers are, nevertheless required to determine a standing offer price to be offered to domestic or small business customers in relation to properties for which they have responsibility for supply. These prices must be gazetted at least one month before taking effect and, once published, may not be varied for a period of six months.<sup>150</sup>

Unlike other distribution networks in the NEM, determination periods for Victorian electricity network service providers generally run on a calendar year rather than a financial year basis. In this report, Victorian inputs were converted to financial years, prior to estimating price movements over the 2011/12 - 2014/15 period.

The retail electricity prices estimated for Victoria in this report are based on published retail standing offers and may not be directly comparable with regulated offers in other jurisdictions.

Standing offers differ in nature from the regulated retail prices in that they are independently set by individual retailers, rather than being determined by a jurisdictional regulator or otherwise set by a jurisdictional government. Standing offers will tend to overstate the actual prices paid by representative residential customers receiving supply on market offers.

According to the Essential Services Commission in Victoria, the standing offers in that state are, on average, 12 per cent higher than current market offers.<sup>151</sup> This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh to an average market offer price of 25.7 c/kWh.

<sup>148</sup> Essential Services Commission, Energy retailers comparative performance report - pricing 2012, September 2012 at page 43.

<sup>149</sup> The South Australian Government has also deregulated its retail electricity prices from 1 February 2013. In conjunction with this the South Australian Government also announced that the regulated electricity price would also be discounted for two years under an agreement with AGL: see section 3.6.

<sup>&</sup>lt;sup>150</sup> Section 3, *Electricity Industry Act 2000*, (Victoria).

<sup>&</sup>lt;sup>151</sup> Essential Services Commission, *Energy retailers comparative performance report - pricing 2011/12,* September 2012 at page 43.

#### Figure 3.11 Victoria at a glance

VICTORIA	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service Providers (TNSPs)	SP Ausnet (operator) AEMO (planner)	Private ownership AEMO	Yes - regulated by the Australian Energy Regulator (AER)	1 July 2008 - 30 June 2014	
Distribution Network Service Providers (DNSPs)	Powercor Jemena United Energy CitiPower SP Ausnet	Private ownership	Yes – regulated by the Australian Energy Regulator (AER)	1 January 2011 - 31 December 2015	<ul> <li>Standard feed-in tariff</li> <li>Transitional feed-in tariff</li> <li>Premium feed-in tariff</li> </ul>
Host retailers <sup>a</sup>	AGL Origin Energy EnergyAustralia <sup>b</sup> All retailers required to publish standing offers.	Private ownership	No – Essential Services Commission does not regulate standing offers, but does regulate the terms and conditions of supply under standing offers.	(r <u>u</u> 2)	<ul> <li>Carbon price (via the wholesale energy price)</li> <li>Large scale Renewable Energy Target (LRET)</li> <li>Small scale Renewable Energy Scheme (SRES)</li> <li>Victorian Energy Efficiency Target (VEET)/ Energy Saver Incentive</li> </ul>
Residential/small retail customers <sup>c</sup>	Total	2,269,037			
Typical residential consumption levels <sup>d</sup>	4,636kWh				
Typical household consumption <sup>e</sup>	1 person household 2 person household 3 person household 4 person household	4,028kWh 4,835kWh 5,642kWh 6,449kWh			

Sources: Department of Primary Industries (DPI), Australian Energy Regulator (AER).

a. From AER, State of the energy market 2012, at page 120. Data current as at October 2012.

- b. Formerly TRUenergy.
- c. As at 30 June 2011, ESAA, Electricity Gas Australia 2012.
- d. From information provided by DPI based on AER data, as at 2012; for single rate electricity consumption.
- e. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

#### 3.5.2 Trends in Victorian standing offer retail electricity prices

#### Box 3.7: Key points for Victoria

From 2011/12 to 2012/13, regulated prices in Victoria rose nominally by 11 per cent. This is equivalent to a nominal increase of 3.1 c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will increase at an average annual rate of five per cent. This is equivalent to a total nominal increase of 3.4 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/1, change to the distribution network component is the main driver of change to the standing offer price in Victoria.

40.0				
				35.2
35.0		31.9	32.9	
30.0	28.8			
25.0			_	
20.0	_		_	_
15.0				
10.0				-
21.				
50				
5.0				
5.0	Base Year 2011/12	Current Year 2012/13	Projection 2013/14	Projection 2014/15
/kWh (nominal) - See notes below) energy savings	Bæe Yær 2011/12 0.4	Current Year 2012/13 0.4	Projection 2013/14 0.4	Projection 2014/15 0.4
5.0 (kWh (nominal) - See notes below) energy savings Small Scale Renewable Energy Scheme	Base Year 2011/12 0.4 0.5	Current Year 2012/13 0.4 0.3	Projection 2013/14 0.4 0.1	Projection 2014/15 0.4 0.1
5.0 (kWh (nominal) - See notes below) energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target	Base Year 2011/12 0.4 0.5 0.4	Current Year 2012/13 0.4 0.3 0.7	Projection 2013/14 0.4 0.1 0.7	Projection 2014/15 0.4 0.1 0.8
5.0 (kWh (nominal) - See notes below) energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target Ret all Margin	Base Year 2011/12 0.4 0.5 0.4	Current Year 2012/13 0.4 0.3 0.7	Projection 2013/14 0.4 0.1 0.7	Projection 2014/15 0.4 0.1 0.8
5.0 (kWh (nominal) - See notes below) energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target Ret all Margin Ret all and wholesale	Base Year 2011/12 0.4 0.5 0.4 - 17.5	Current Year 2012/13 0.4 0.3 0.7 - 17.3	Projection 2013/14 0.4 0.1 0.7 - 17.0	Projection 2014/15 0.4 0.1 0.8 - 18.0
5.0 c/kWh (nominal) - See notes below) energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target Large Scale Renewable Energy Target Ret ail Margin Ret ail Margin Feed-in Tariffs	Base Year 2011/12 0.4 0.5 0.4 - 17.5 0.2	Current Year 2012/13 0.4 0.3 0.7 - 17.3 0.2	Projection 2013/14 0.4 0.1 0.7 - 17.0 0.2	Projection 2014/15 0.4 0.1 0.8 - 18.0 0.2
5.0 c/kWh (nominal) - See notes below) - energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target Ret ail Margin Ret ail and wholesale Feed-in Tariffs Distribution	Base Year 2011/12 0.4 0.5 0.4 - 17.5 0.2 8.5	Current Year 2012/13 0.4 0.3 0.7 - 17.3 0.2 9.5	Projection 2013/14 0.4 0.1 0.7 - 17.0 0.2 10.6	Projection 2014/15 0.4 0.1 0.8 - 18.0 0.2 11.8
5.0 c/kWh (nominal) - See notes below) - energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target Ret ail Margin Ret ail and wholesale Feed-in Tariffs Distribution Transmission	Base Year 2011/12 0.4 0.5 0.4 - 17.5 0.2 8.5 1.3	Current Year 2012/13 0.4 0.3 0.7 - 17.3 0.2 9.5 1.3	Projection 2013/14 0.4 0.1 0.7 - 17.0 0.2 10.6 1.3	Projection 2014/15 0.4 0.1 0.8 - - 18.0 0.2 11.8 1.4
5.0 c/kWh (nominal) (See notes below) energy savings Small Scale Renewable Energy Scheme Large Scale Renewable Energy Target Ret ail Margin Ret ail and wholesale Feed-in Tariffs Distribution Transmission Carbon costs	Base Year 2011/12 0.4 0.5 0.4 - 17.5 0.2 8.5 1.3 -	Current Year 2012/13 0.4 0.3 0.7 - 17.3 0.2 9.5 1.3 2.2	Projection 2013/14 0.4 0.1 0.7 - - 17.0 0.2 10.6 1.3 2.5	Projection 2014/15 0.4 0.1 0.8 - 18.0 0.2 11.8 1.4 2.5

#### Figure 3.12 Victoria - residential standing offer price trends from 2011/12 to 2014/15

#### Notes:

1. Note that the Victorian prices shown in this graph are based on published standing offers and are likely to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, based on 2011/12 prices, the published standing offers are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh, resulting in an average market offer price of 25.7 2. Values are nominal (not adjusted for inflation) and exclusive of GST.

3. Numbers may not add due to rounding.

# Figure 3.13 Victoria - summary of standing offer price movements by component from 2011/12 to 2015

Victoria	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	2%	2%	0.1	1%
Distribution component	<mark>1</mark> 1%	12%	3.3	52%
Retail and wholesale compone	11%	2%	3.0	47%
Total	11%	5%	6.5	100%

#### Notes:

1. Note that estimations of Victorian prices and trends are based on published standing offers which are likely to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, based on 2011/12 prices, the published standing offers are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh, resulting in an average market offer price of 25.7 c/kWh.

Values are nominal (not adjusted for inflation) and exclusive of GST.
 Numbers may not add due to rounding.

#### 3.5.3 Transmission network component

#### Results

Between 2011/12 and 2012/13, the transmission network component increased by two per cent in nominal terms, with an immaterial impact on the retail price. This was a contribution of one per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by two per cent per year. This equates to a total increase in this component of 0.1 c/kWh. This compares with the total estimated increase of 3.4 c/kWh across all components over this remaining period.

#### Background

In Victoria, SP AusNet is the major transmission asset owner and operator, while the AEMO has responsibility for the investment decision making and planning functions, the procuring of new transmission capacity, and for connections to the transmission network.<sup>152</sup>

The current regulatory determination period for transmission networks in Victoria runs from 1 July 2008 to 30 June 2014.

The final decision for SP AusNet provides for increasing investment in the transmission network for the replacement of ageing assets and refurbishment of existing assets and to maintain reliability and security of supply. It also reflects an increase in the rate of return, particularly debt costs, which reflected the prevailing conditions in financial markets stemming from the sub-prime crisis in the United States and other factors at the time.<sup>153</sup>

<sup>&</sup>lt;sup>152</sup> These functions were previously undertaken by VENCorp.

<sup>153</sup> Australian Energy Regulator, SP AusNet Transmission determination 2008/09 to 2013/14, Final decision, January 2008, on pages 1 and 2.

The final determination for SP AusNet allows for an increase in the rate of return of about 1.5 per cent compared to the previous regulatory control period.<sup>154</sup>

The next regulatory period for Victorian transmission commences on 1 April 2014 and the new determination will be made under the transitional provisions of the new network regulation rules following the AEMC's recent network regulation rule determination.<sup>155</sup>

### 3.5.4 Distribution network component

#### Results

Between 2011/12 and 2012/13, the distribution network component, including the feed-in tariff, increased by 11 per cent (one c/kWh) in nominal terms. This contributed 31 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by 12 per cent per year. This equates to a total increase in this component of 2.4 c/kWh. This compares with the total estimated increase of 3.4 c/kWh across all components over this remaining period.

### Background

The current distribution determination for the 2011-2015 regulatory period is the first made by the AER in respect of the five Victorian distribution network service providers. The determination included several transitional arrangements in accordance with specific provisions in the National Electricity Rules.<sup>156</sup>

The AER noted that the current distribution network determination allows for higher levels of capital expenditure and operating expenditure compared to the previous regulatory control period. This was due to additional expenditure needs for replacement of ageing assets, to meet the higher customer peak demand forecasted at the time, and to meet new safety related obligations imposed on the businesses following the Victorian bushfires in 2009.<sup>157</sup> The final determination also noted that further new obligations and expenditure requirements could arise from the

<sup>&</sup>lt;sup>154</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: 9.8 per cent approved for 2008-2014, compared to 8.2 per cent approved earlier: Australian Energy Regulator, *Victorian transmission network revenue caps 2003-2008*, at page ix; Australian Energy Regulator, *SP AusNet transmission determination 2008/09 to 2013/14*, at page 107.

<sup>155</sup> Australian Energy Market Commission, National Electricity Amendment (Economic regulation of network providers) Rule 2012, National Gas Amendment (Price and revenue regulation of gas services) Rule 2012, Rule determination, 29 November 2012.

<sup>&</sup>lt;sup>156</sup> Australian Energy Regulator, *Victorian electricity distribution network service providers, distribution determination 2011-2015,* final decision, October 2010.

<sup>157</sup> Australian Energy Regulator, Victorian electricity distribution network service providers, distribution determination 2011-2015, final decision, October 2010 at page i. For example, all distributors in Victoria are now required to develop and implement Energy Safety Management Schemes, which led to a steep increase in replacement expenditure. New legislation to impose further bushfire safety requirements on Victorian network companies was introduced into State Parliament in September 2011. The Act extends the obligation to mitigate bushfire risks to the whole of electricity company's supply networks, rather than just their at-risk supply networks after Energy Safe Victoria found the current distinction was unworkable, due to the fluid nature of the boundaries between low-risk and high-risk network areas.

recommendations of the Victorian Bushfires Royal Commission, as determined by the Victorian Government. These would be dealt with under the regulatory framework as they arose.

The current determinations for all distributors allow for an increase in the rate of return of between one and 1.8 per cent compared to the previous regulatory control period.<sup>158</sup>

#### Advanced metering infrastructure program

This cost is included in the distribution network component in this report but it is usually treated under a separate determination process from that usually followed for distribution network revenue determinations.<sup>159</sup>

The 2013 revision of advanced metering infrastructure (AMI) charges approved by the AER was higher than originally forecasted in 2011. This was a result of increased spending on information technology and communications and unplanned expenditure on accumulation meters and manually read interval meters.<sup>160</sup>

# Box 3.8: Cost recovery process for the Victorian advanced metering infrastructure program

The cost recovery process was established by an Order in Council made under Victorian law,<sup>161</sup> and budget periods for this program run for three calendar years, with the current period running from January 2012 through to December 2015. These budgets are established by the distributors and agreed with the AER

<sup>158</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital of between 9.5 per cent to 10.3 per cent approved for 2011-2015, compared to 8.5 per cent approved earlier: Australian Energy Regulator, United Energy Distribution determination 2011-2015 pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (no 2) [2012] A CompT 8, September 2012 at page 27; Australian Energy Regulator, Jemena Electricity Networks (Victoria) Ltd Distribution determination 2011–2015 pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (no 2) [2012] A CompT 8, September 2012 at page 30; Australian Energy Regulator, CitiPower Pty Distribution determination 2011–2015 pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (no 2) [2012] A CompT 8, September 2012 at page 25; Australian Energy Regulator, SPI Electricity Pty Ltd Distribution determination 2011-2015 pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (no 2) [2012] A CompT 8, September 2012 at page 30; September 2012 at page 25; Australian Energy Regulator, Powercor Australia Ltd Distribution determination 2011–2015 pursuant to Orders of the Australian Competition Tribunal in Application by United Energy Distribution Pty Limited (no 2) [2012] A CompT 8, September 2012 at page 28; Essential Services Commission, Electricity Distribution Price Review 2006-10, Final decision, volume 1, at page 332.

<sup>&</sup>lt;sup>159</sup> This program involves the rollout of smart meter infrastructure and the two-way communication system between the smart meter and electricity distributors in Victoria. This follows the 2006 Victorian Government mandate for an accelerated replacement of the State's existing electricity meters with new smart meters. The rollout commenced in 2009, and is due for completion by the end of 2013.

<sup>160</sup> Australian Energy Regulator, Advanced metering infrastructure - 2013 revised charges, Determination, October 2012 at page 5. This level of over expenditure is allowed under Clause 5.I2 of the current AMI Order in Council.

<sup>&</sup>lt;sup>161</sup> The original Order in Council was made in 2007 (S200 - 28 August 2007), and has been amended several times since then. These documents may be accessed on http://www.gazette.vic.gov.au/.

at the beginning of each budget period and include forecasts for capital and operating expenditure that each distributor will require for the rollout, such as expenditure on metering assets, information technology (IT) and communications.<sup>162</sup>

Distributors are required to revise charges to apply in the next year based on expenses incurred and any forecast expenditure updates. Annual charges are then determined based on a combination of actual and forecast expenditure, assessed in terms of program scope and prudence by the AER.<sup>163</sup> Charges are then incorporated into customers' electricity bills.

### Victorian feed-in tariff schemes

From 2011/12 to 2014/15, the Victorian feed-in tariff schemes are estimated to add 0.2 c/kWh annually to the distribution network component.

Victoria has two distributor funded feed-in tariff programs operating, the costs for which are recovered by the distributors through their network prices:

- The Premium feed-in tariff commenced in 2009. It offered eligible households a rate of 60c/kWh for excess electricity fed back into the grid. This scheme has now closed to new participants, but payments to eligible customers will continue until 2024.
- The Transitional feed-in tariff commenced in early 2012. It pays 25c/kWh for excess electricity fed back into the grid. This scheme closed on 31 December 2012, although payments to eligible customers will continue until 2016.<sup>164</sup>

# 3.5.5 Retail and wholesale component

#### Results

Between 2011/12 and 2012/13, the combined retail and wholesale component, including the carbon price and retail environmental scheme obligations, increased by 11 per cent (2.1 c/kWh) in nominal terms. This contributed 68 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this combined component will increase, on average, by two per cent per year. This equates to a total increase for this component of 0.9 c/kWh and compares with the total estimated increase of 3.4 c/kWh across all components over this remaining period.

<sup>162</sup> Australian Energy Regulator, Advanced metering infrastructure - 2013 revised charges, Determination, October 2012.

<sup>&</sup>lt;sup>163</sup> Victorian Department of Treasury and Finance, *Review of the advanced metering infrastructure program*, Issues paper, May 2011.

<sup>164</sup> A third scheme, the Standard feed-in tariff is a retailer funded scheme and, eligible participants that had joined the scheme before September 2012 received payment on a 'one for one' basis for excess generation fed back into the grid, based on the retail rated for power. After September 2012 the rate was dropped to 8c/kWh based on the wholesale rate of power.

#### Background

The modelling shows a decrease in the retail and wholesale component, excluding the impact of the carbon price and retail environmental scheme obligations, between 2011/12 and 2012/13.

The cost to retailers of supplying residential customers is also higher than compared to other jurisdictions, reflecting the peaky Victorian residential load shape and the additional hedging costs of meeting this load; that is, including an assumed contract premium of five per cent above the forecast pool prices.<sup>165</sup>

This is in part reflective of the market based approach modelled by Frontier adopted to estimate the wholesale energy component. The decrease in the modelled wholesale energy component is attributable to the low spot prices generally assumed by Frontier, following reduced demand and combined with ongoing investment in renewable generation to meet the enhanced Renewable Energy Target (RET).<sup>166</sup>

The reduced demand coincides with the reduction in the forecast level of manufacturing and industrial activity, the increased penetration of solar panels, as well as consumer response to rising prices and energy efficiency measures in Victoria.<sup>167</sup>

In addition, the Frontier modelling did not take into account the moth balling of plant at the Yallourn power station.  $^{168}\,$ 

These factors may have a greater impact on demand and wholesale prices in the Victorian market than modelled in this report.

#### Carbon price

The carbon price estimations, provided by the Commonwealth Department of Climate Change and Energy Efficiency, show that the introduction of the carbon price on 1 July 2012 adds around 2.2 c/kWh to the retail and wholesale component in 2012/13. This increases to 2.5 c/kWh in 2013/14 and 2014/15.

#### Enhanced Renewable Energy Target

The LRET added an additional 0.4 c/kWh annually to the retail portion of the retail and wholesale component in 2011/12 and is estimated to increase to 0.8 per cent in 2014/15, in line with an increase in the target over this period.

The SRES added an additional 0.5 c/kWh to the retail portion of the retail and wholesale component in 2011/12, but this is estimated to decrease to 0.1 c/kWh by 2014/15. This is attributed to the general reduction in feed-in tariffs paid to new participants under the various jurisdictional schemes, and cessation of the Solar Credits multiplier on 1 January 2013.

<sup>&</sup>lt;sup>165</sup> Frontier Economics, *Future possible retail electricity price movements*, Final report, December 2012.

<sup>166</sup> Frontier Economics, *Possible future retail electricity price movements*, Final report, December 2012 at page 38.

<sup>167</sup> These impacts were noted by AEMO in its recent ESOO and forecasting reports: Australian Energy Market Operator, 2011 ESOO update, March 2011, 2012 National electricity forecasting report, at pages 8-1 and 8-2.

<sup>&</sup>lt;sup>168</sup> Frontier Economics, *Future possible retail electricity price movements*, Final report, December 2012.

#### Victorian Energy Efficiency Target

It is estimated that this scheme adds 0.4 c/kWh annually to the retail portion of the retail and wholesale component.  $^{169}\,$ 

This scheme commenced in January 2009 and is legislated to continue in three-year phases until 1 January 2030.<sup>170</sup> It operates by placing a liability on energy retailers in Victoria to surrender a specified number of energy efficiency certificates every year.

<sup>169</sup> This scheme is also referred to as the Energy Saver Incentive.

<sup>&</sup>lt;sup>170</sup> The second three year phase of this scheme commenced on 1 January 2012 and set a scheme target of 5.4 million Victorian energy efficiency certificates per annum. More information on this scheme is available from the Essential Services Commission website at www.veet.vic.gov.au/.

### 3.6 South Australian summary

#### 3.6.1 General

Full retail competition in electricity was introduced for all customers in South Australia on 1 January 2003.

Until recently the regulation of residential electricity prices, and the contractual terms and conditions of supply, was overseen by the South Australian utilities regulator, the Essential Services Commission of South Australia (ESCOSA). From 1 February 2013 ESCOSA's role in this regard moved from price regulation to price monitoring.

The retail regulatory period generally ran for three years following a price determination,<sup>171</sup> with the resulting revenue requirement adjusted annually by CPI. The most recent regulatory control period was scheduled to run for three and a half years, from 1 January 2011 until 30 June 2014, to better align with the electricity distribution adjustments approved by the regulator.<sup>172</sup>

Within this regulatory control period, ESCOSA adopted a new regulated price setting process in response to perceived challenges in the wholesale and contracts markets, which included the application of stand-alone LRMC modelling for estimating the wholesale energy prices.<sup>173</sup>

<sup>&</sup>lt;sup>171</sup> Referred to by ESCOSA as the 'price path period'.

<sup>&</sup>lt;sup>172</sup> Essential Services Commission of South Australia, 2010 Review of retail electricity standing contract price path, Final inquiry report and final price determination, December 2010, at page i.

<sup>173</sup> Previous determinations had used a market cost based approach to estimating this component. The new methodology that was adopted by ESCOSA is referred to as the Relative Price Movement methodology, and established an initial cost reflective price prior to the price path period, adjusting it on an annual basis thereafter in line with market contract prices within an established price band. This was adopted to address ESCOSA's concerns at the time around the uncertainties created by the Commonwealth Government's climate change policies and response measures, volatility in the electricity wholesale market and, in particular, the lack of liquidity observed in the South Australian electricity forward contract market.

#### Figure 3.14 South Australia at a glance

SOUTH AUSTRALIA	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service	ElectraNet	Private ownership	Yes - regulated by Australian Energy	1 July 2008 -	1.5
Providers (TNSPs)			Regulator (AER)	30 June 2013	
Distribution Network Service	SA Power Networks <sup>a</sup>	Private ownership	Yes - regulated by Australian Energy	1 July 2010 -	Feed-in tariff
Providers (DNSPs)			Regulator (AER)	31 December 2015	
Host retailers <sup>b</sup>	AGL SA	Private ownership	Retail tariffs for standing offers for	1 January 2011 -	Carbon price (via the wholesale energy price)
			residential customers were regulated 31 January 2013 by the Essential Services Commission of South Australia (ESCOSA) until 31 January 2013.	31 January 2013	<ul> <li>Large scale Renewable Energy Target (LRET)</li> </ul>
					<ul> <li>Small scale Renewable Energy Scheme (SRES)</li> </ul>
				<ul> <li>Residential Energy Efficiency Scheme (REES)</li> </ul>	
			Retail price regulation for electricity		
			(and gas) has been removed from 1		
Desidential customers <sup>c</sup>	Total	733 /17	February 2013.		
Trainel and destinel as a supervise	F 00014Wb	755,417			
levels <sup>d</sup>	5,000kwn				
Typical household consumption *	1 person household	4,398kWh			
	2 person household	5,306kWh			
	3 person household	6,213kWh			
	4 person household	7,121kWh			

Sources: Department for Manufacturing, Innovation, Trade, Resources and Energy (DMITRE), Essential Services Commission of South Australia (ESCOSA), Australian Energy Regulator (AER).

- a. Formerly ETSA Utilities.
- b. From AER, State of the energy market 2012, at page 120. Data current as at October 2012.
- c. As at 30 June 2011, ESCOSA, Retail energy market time series data, www.escosa.sa.gov.au, viewed at 19 February 2013.
- d. From information supplied by DMITRE.
- e. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

The regulated retail price that was determined was to have applied from 1 January 2011.It was subsequently re-examined on two further occasions within this period to allow for the following changes:

- in June 2011<sup>174</sup> to allow for the adjustment of the distribution network component following SA Power Networks'<sup>175</sup> successful appeal of aspects of the AER's determination to the Australian Competition Tribunal (Tribunal);<sup>176</sup> and
- in June 2012 to take account of the commencement of the Commonwealth Government's Clean Energy Act on 1 July 2012, and a further change to the distribution network charges, following approval by the AER to an allowance for the recovery of costs associated with the South Australian feed-in tariff scheme.<sup>177</sup>

### Removal of price regulation

In June 2012 ESCOSA initiated a review into wholesale energy costs in South Australia. A draft determination was published on October 2012, with a final determination proposed by December 2012.<sup>178</sup>

The draft determination proposed changes that would have led to an eight per cent reduction for electricity standing contract customers, but the review process was overtaken by a number of external events:

- on 4 December 2012 AGL Energy Ltd (AGL) commenced proceedings in the South Australian Supreme Court seeking permission to proceed with an action to challenge the decision by ESCOSA to amend its previous price determination. The application had been set down for hearing by the Court on 17 December 2012;<sup>179</sup>
- on 18 December 2012 the South Australian Government announced a policy change to implement retail electricity price deregulation this was implemented from 1 February 2013;<sup>180</sup>
- in response to this announcement, and as part of a two year arrangement with the South Australian Government, AGL discontinued its application to the Supreme Court and has committed to cutting the existing standing contract price

<sup>&</sup>lt;sup>174</sup> Essential Services Commission of South Australia, 2011-2014 Electricity standing contract price determination, Variation price determination, June 2011.

<sup>175</sup> Formerly ETSA Utilities.

<sup>&</sup>lt;sup>176</sup> This had the effect of increasing the regulated prices by approximately CPI plus eight per cent - which was in excess of the cap set under the new methodology.

<sup>177</sup> Essential Services Commission of South Australia, 2011-2014 Electricity standing contract price determination, Variation price determination, 12 June 2012.

<sup>&</sup>lt;sup>178</sup> Essential Services Commission of South Australia, 2011-2014 Electricity standing contract price determination wholesale electricity cost investigation, Determination of special circumstances, statement of reasons and draft standing contract (further variation) price determination, October 2012.

<sup>179</sup> AGL, AGL to challenge ESCOSA's right to review prices, 4 December 2012; AGL's challenge of ESCOSA's right to review prices, 7 December 2012, ASX and media releases, at www.agl.com.au.

<sup>180</sup> Government of South Australia, News Release, Tuesday 18 December 2012, at www.premier.sa.gov.au. Standing contracts will be based on nationally established minimum conditions set out under the National Energy Customer Framework.

for residential customers by about nine per cent, and 4.5 per cent for small businesses;

- on 18 December 2012 ESCOSA announced the suspension of the wholesale electricity cost review;<sup>181</sup> and
- from 1 February 2013 ESCOSA's role in this regard moved from price regulation to price monitoring.

Due to the timing of these announcements, these impacts have not been included in the modelling for this report, which continues to be based on Frontier's modelling. This assumes the methodology published in ESCOSA's October draft determination.

### 3.6.2 Trends in South Australian residential electricity prices

#### Box 3.9: Key points for South Australia

From 2011/12 to 2012/13, regulated prices in South Australia rose nominally by 13 per cent. This is equivalent to a nominal increase of 3.8 c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will decrease at an average annual rate of one per cent. This is equivalent to a total nominal decrease of 0.4 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, increases in the transmission and distribution network components are more than offset by the falls in the wholesale energy and retail components in South Australia.

<sup>181</sup> Essential Services Commission of South Australia, Media release, 18 December 2012.

# Figure 3.15 South Australia - residential electricity price trends from 2011/12 to 2014/15



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

# Figure 3.16 South Australia - summary of price movements by component from 2011/12 to 2015

South Australia	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh
Transmission component	10%	7%	0.7
Distribution component	28%	7%	5.0
Wholesale energy component	2%	-11%	-2.1
Retail component	4%	-5%	-0.3
Total	13%	-1%	3.4

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Table does not take into account the 9.1% reduction from 1 January 2013.

#### 3.6.3 Transmission network component

#### Results

Between 2011/12 and 2012/13, the transmission network component increased by ten per cent (0.3 c/kWh) in nominal terms. This contributed eight per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by seven per cent per year. This equates to a total increase in this component of 0.4 c/kWh. This compares with the total estimated decrease of 0.4 c/kWh across all components over this remaining period.

#### Background

Transmission services are provided by ElectraNet. Its current regulatory control period runs until 30 June 2013.

Expected increases to transmission charges compared to the previous period were identified to be primarily due to:

- a higher rate of return;
- the need to replace and maintain ageing assets and the continuation of an extensive asset refurbishment program, which had been initiated in the previous regulatory control period;
- the costs associated with meeting new and more stringent reliability standards from July 2008 under the then newly revised South Australian Electricity Transmission Code, following a review by ESCOSA;
- increased costs associated with the service target performance incentive scheme, which were higher than those applied to ElectraNet in the previous period;
- high input costs such as construction materials and labour; and
- increased operational expenditure due to a growing asset base.<sup>182</sup>

The current determination provides for an increase in the rate of return of about 2.4 per cent compared to the previous regulatory control period.<sup>183</sup>

The AER has commenced the process for making a new transmission determination for ElectraNet in respect of the 2013/14 - 2018/19 regulatory control period. The final decision is scheduled to be released at least two months before the new regulatory control period begins on 1 July 2013.

Due to the timing of the process, the new determination will be made under the network regulation rules current at the time the process was initiated, in 2012, rather

Australian Energy Regulator, *ElectraNet transmission determination 2008/09 - 2012/13*, Final decision, 11 April 2008.

<sup>183</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: 10.7 per cent approved for 2008-2013, compared to 8.3 per cent approved previously: Australian Competition and Consumer Commission, SA Transmission network revenue cap 2003-2007/08, Decision, 11 December 2002; Australian Energy Regulator, ElectraNet transmission determination, 2008/09-2012/13, 11 April 2008.

than the new network regulation rules which followed the AEMC's recent network regulation rule determination.  $^{184}\,$ 

### 3.6.4 Distribution network component

#### Results

Between 2011/12 and 2012/13, the distribution network component, including the feed-in tariff, increased by 28 per cent (3.1 c/kWh) in nominal terms. This contributed 82 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by seven per cent per year. This equates to a total increase in this component of 1.9 c/kWh. This compares with the total estimated decrease of 0.4 c/kWh across all components over this remaining period.

#### Background

The current regulatory control period for SA Power Networks<sup>185</sup> commenced on 1 July 2010 and runs until 30 June 2015.

The increases for this component in South Australia reflect the adjustments made following the successful appeal of SA Power Networks to the Tribunal of aspects of its network determination, and the pass-through of costs relating to under-recovered feed-in tariff costs for the two previous years.

In its final determination for SA Power Networks, the AER noted that the energy usage patterns experienced in South Australia, in particular peak demand driven by the use of air conditioners during summer, were a contributory factor to increased network expenditure over the regulatory period.

This increase in peak demand was occurring despite a decrease in average consumption levels, the introduction of energy efficiency programs and the increased penetration of small photovoltaic systems. The AER also noted, at the time, that maximum demand is forecast to grow on average by 2.4 per cent per year, while energy sales are forecast to decline by an average of 0.7 per cent per year over the next regulatory control period.

The outcome is that the revenue required for SA Power Networks to maintain the integrity of the network, supply reliability and services to customers over the 2010–15 regulatory control period is applied to a smaller volume of energy sold.<sup>186</sup>

The network also needed to address reliability risks from ageing assets and new reliability standards for the Adelaide central business district.  $^{187}$ 

Following the issue of the final determination, SA Power Networks applied to the Tribunal for a review of the value of imputation credits and the value of its opening

<sup>184</sup> Australian Energy Market Commission, National Electricity Amendment (Economic regulation of network providers) Rule 2012, National Gas Amendment (Price and revenue regulation of gas services) Rule 2012, Rule determination, 29 November 2012.

<sup>&</sup>lt;sup>185</sup> Formerly ETSA Utilities.

<sup>186</sup> Australian Energy Regulator, South Australia distribution determination 2010/11 to 2014/15, May 2010, at page v.

<sup>&</sup>lt;sup>187</sup> Australian Energy Regulator, *State of the energy market 2011*, at page 63.

regulatory asset base. The orders from the Tribunal allowed for an additional \$301 million to be recovered over the current regulatory period.

According to ESCOSA the outcome of this appeal had the effect of increasing the annual rate of change to distribution network charges from CPI plus 5.8 per cent, provided for by the AER in its distribution determination, to CPI plus 18.1 per cent on 1 July 2011. This led to an overall network increase (including transmission increases) to small customers of approximately CPI plus 25 per cent from that date.<sup>188</sup>

Including any Tribunal adjustments, the current determination provides for an increase in the rate of return of about one per cent compared to the previous regulatory control period.<sup>189</sup>

### Feed-in tariff

The feed-in tariff scheme is estimated to add 2.2 c/kWh to the distribution network component in 2013/14. This decreases to 1.3 c/kWh in 2014/15.<sup>190</sup>

The original determination included the recovery of forecasted costs associated with the South Australian feed-in tariff scheme in the operating expenditure allowance, with adjustments allowed for over and under recovery.

Following a change to the National Electricity Rules, SA Power Networks elected to recover its feed-in tariff payments under the jurisdictional scheme amounts provisions of the National Electricity Rules.<sup>191</sup> This required the payment amounts previously allowed in the operating expenditure to be removed from the allowed revenues, which was effected on February 2012.<sup>192</sup>

ESCOSA has reported that the increase in the 2012/13 network price due to the feed-in tariff scheme alone is around 6.9 per cent.<sup>193</sup> This recovery includes the cumulative under-recovery of feed-in costs for the 2010/11 to 2012/13 periods, and is expected that this will ease in subsequent years.

<sup>188</sup> This would be followed by an increase of CPI plus seven per cent from 1 July 2012. Essential Services Commission of South Australia, 2011-2014 *Electricity standing contract price determination - Variation price determination*, June 2011.

<sup>189</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: 9.8 per cent approved for 2011-2015, compared to 8.7 per cent approved previously: Essential Services Commission of South Australia, *Electricity distribution price determination 2005-2010*, Part A Statement of reasons, 5 April 2005; Australian Energy Regulator, *SA Distribution determination 2010/11-2014/15*, Final decision, May 2010.

<sup>&</sup>lt;sup>190</sup> Additional information on scheme costs was provided by SA Power Networks.

<sup>191</sup> Australian Energy Market Commission, National Electricity Amendment (Payments under feed-in schemes and climate change funds) Rule 2010, Final rule determination, 1 July 2010. The new rule permitted distributors to recover the costs associated with approved jurisdictional schemes on a forecast basis through the annual pricing process rather than through distribution determination allowances.

<sup>&</sup>lt;sup>192</sup> Australian Energy Regulator, *ETSA Utilities application for revocation and substitution of 2010/11 to 2014/15 distribution determination - Feed-in tariff payments,* Determination, February 2012.

<sup>&</sup>lt;sup>193</sup> Essential Services Commission of South Australia, 1 July 2012 electricity standing contract price adjustment.

#### 3.6.5 Wholesale energy component

#### Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by two per cent (0.2 c/kWh) in nominal terms. This contributed four per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, on average, by 11 per cent per year. This equates to a total decrease in this component of 2.2 c/kWh. This compares with the total estimated decrease of 0.4 c/kWh across all components over this remaining period.

#### Background

There are a number of other factors which are unique to South Australia, and which historically contributed to higher wholesale prices in this state on average, compared to other jurisdictions. These factors include:

- a relatively small market;
- a high dependence on gas fired generation, which on average has been more costly than coal fired generation; and
- relatively limited interconnection capability, which limits the amount of potentially cheaper electricity than can be imported from other jurisdictions.

However this may change with an increasing volume of wind generation being located in South Australia. The AER has noted that there is some evidence that wind generation, which accounts for around 24 per cent of generation capacity in South Australia, is having a moderating impact on electricity prices in this state, with spot prices typically higher at times of low wind.<sup>194</sup>

The movement of the wholesale energy component between 2011/12 and 2012/13 reflects the approach taken by the jurisdictional regulator in its estimation of that component. The decrease from 9.4 c/kWh in 2012/13 to 6.5 c/kWh in 2013/14 is due to the shift from a stand-alone LRMC approach to estimating this component in 2011/12 and the first half of 2012/13, to a market based approach in 2013, reflecting the proposal by ESCOSA in October 2012.<sup>195</sup> The drop is a result of the relatively low forecasted spot prices that were assumed at the time the modelling was undertaken.

The timing of market modelling undertaken for this report does not take account of the more recent announcements in relation to the mothballing of the Northern and Playford generators.

In its 2010 final price determination, ESCOSA adopted a stand-alone LRMC methodology to determining the wholesale energy prices: previous determinations had used a market cost based approach. This change in methodology was largely due to

<sup>194</sup> Australian Energy Regulator, State of the Energy market report 2012 at page 32. The total installed capacity was 1,203MW in 2011/12 Australian Energy Market Operator, South Australian Wind Study Report, 2012.

<sup>195</sup> See section 3.6.1.

ESCOSA's opinion that wholesale and contract market conditions at the time presented challenges to the continued used of a market based approach.<sup>196</sup>

In June 2012 ESCOSA announced that it was initiating an investigation into the regulated wholesale energy allowance following recent developments in the wholesale electricity market which suggested that the forward cost of wholesale electricity might be lower than was assumed in making the original determination.

This review has since been suspended, following the announcement by the South Australian Government to remove price regulation from 1 February 2013.<sup>197</sup>

AEMO has indicated that energy and maximum demand forecasts have decreased since the 2011 ESOO, mainly due to a reduction in manufacturing consumption and slower than expected increase in industrial consumption (taking into account developments in the mining sector and the Port Stanvac water desalination plant), increased penetration of solar rooftop panels, a moderation in the gross state product and consumer response to rising electricity prices and energy efficiency measures.<sup>198</sup>

These factors may have a greater impact on demand and wholesale prices in the SA market than modelled in this report.

### Carbon price

The impact of the carbon price on this component is estimated to remain relatively stable at around 1.4 c/kWh annually to the retail price throughout the period.

### 3.6.6 Retail component

#### Results

Between 2011/12 and 2012/13, the retail component, including the retail environmental scheme obligations, increased by four per cent (0.2 c/kWh) in nominal terms. This contributed six per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, on average, by five per cent per year. This equates to a total decrease in this component of 0.5 c/kWh. This compares with the total estimated decrease of 0.4 c/kWh across all components over this remaining period.

# Background

The setting of retail operating costs and margins was benchmarked by ESCOSA, against allowances granted in other jurisdictions, and includes customer acquisition and

<sup>196</sup> These conditions included a decrease in wholesale market liquidity. ESCOSA, 2010 Review of retail electricity standing contract price path, Final inquiry report and price determination, December 2010. ESCOSA also noted that a special circumstances review could be triggered if a material change in wholesale electricity market arose, requiring a new standing contract price determination to be made.

<sup>&</sup>lt;sup>197</sup> Essential Services Commission, Media announcement, 18 December 2012.

<sup>&</sup>lt;sup>198</sup> Australian Energy Market Operator, *National electricity forecasting report 2012 for the NEM*, at pages 6-1, 6-2.

retention costs. On this basis ESCOSA also set a retail margin of 10 per cent to apply to over wholesale energy and retail operating costs.<sup>199</sup>

On the basis of its findings,<sup>200</sup> ESCOSA made a draft determination to reduce the wholesale energy allowance by \$27.19/MWh. This also reduced the maximum annual aggregate revenue allowance by the same amount, decreasing it from \$335.27/MWh, under the June 2012 variation, to \$308.08/MWh. However ESCOSA's draft determination did not vary the retail margin.<sup>201</sup>

The decision by the South Australian Government to remove price regulation from 1 February 2013 follows an agreement reached with AGL to reduce the price for existing customers receiving supply on the regulated price by 9.1 per cent, backdated to 1 January 2013.<sup>202</sup> This will fix the retail component only for two years, and does not affect the movement of the network components, the impact of the carbon price or other environmental scheme.<sup>203</sup>

As this agreement was concluded after the modelling for this report had been completed, it has not been included in the results.

### Enhanced Renewable Energy Target

The LRET added an additional 0.4 c/kWh annually to the retail component in 2011/12 and is estimated to remain around this level until 2014/15.

The SRES added an additional 0.6 c/kWh to the retail component in 2011/12, but this is estimated to decrease to 0.2 c/kWh by 2014/15. This is attributed to the general reduction in feed-in tariffs paid to new participants under the various jurisdictional schemes, and cessation of the Solar Credits multiplier on 1 January 2013.

#### South Australian Residential Energy Efficiency Scheme

This is an energy efficiency scheme that commenced on 1 January 2009. Under this scheme, energy retailers (electricity and gas) with 5,000 or more residential customers in South Australia are required to provide incentives for households to achieve greenhouse gas reductions through reduced energy consumption.<sup>204</sup>

This scheme is estimated to add an additional 0.3 c/kWh annually to the retail component throughout the period.

<sup>&</sup>lt;sup>199</sup> This excludes network costs from the base on which the margin is calculated.

<sup>200</sup> Essential Services Commission of South Australia, 2011-2014 Electricity standing contract price determination- wholesale electricity cost investigation, Determination of special circumstances, statement of reasons and draft standing contract (further variation) price determination, October 2012. This is discussed in the section 3.6.5.

Ibid, at page 10.

<sup>&</sup>lt;sup>202</sup> This discount applies to existing and new residential customers receiving supply on an electricity standing contract as at 31 January 2013, and will remain in place until 31 December 2014. Existing and new residential customers that sign up for supply on an electricity standing contract from 1 February 2013 will receive a discount of 4.5 per cent off AGL's December 2012 residential standing contract rates. After that date the standing contract price may be changed by AGL. A 4.5 per cent is available to small business customers on similar terms: AGL, *Lower electricity prices for South Australian families and small businesses*, ASX and media releases, 18 December 2012, www.agl.com.au.

<sup>&</sup>lt;sup>203</sup> It is assumed that the fixing of the retail component includes the wholesale energy component

www.escosa.gov.au, viewed on 18 February 2013.

The costs associated with meeting the Residential Energy Efficiency Scheme reflect findings that the option to undertake cheaper eligible activities is starting to meet the saturation point, forcing a move to higher cost activities.<sup>205</sup>

<sup>205</sup> Essential Services Commission of South Australia, 2010 Review of retail electricity standing contract price path, Final inquiry report and price determination, December 2010, at page A-89. Obligations under this scheme are imposed on electricity and gas retailers with a minimum of 5,000 residential customers. The scheme commenced on 1 January 2009, aimed at providing incentives for households to achieve greenhouse gas emissions reductions. The scheme is scheduled to conclude on 31 December 2014. More information on this scheme may be found on ESCOSA's website www.escosa.sa.gov. This scheme are usually included in the calculation of retail operating costs but is separately identified here in accordance with this report's Terms of Reference.

#### 3.7 Tasmanian summary

#### 3.7.1 General

All the major participants in the Tasmanian electricity market are currently government owned entities. Full retail electricity competition has not been introduced for residential electricity customers in Tasmania, although a phased introduction of retail competition commenced in 2005. The most recent tranche of customers brought into the contestable market were those business customers with consumption greater than 50MWh per annum, referred to as Tranche 5a, in 2011.

Retail price regulation is currently conducted by the Office of the Tasmanian Energy Regulator (OTTER) in accordance with the *Electricity Supply Industry (Price Control) Regulations 2003.* Under the current process, OTTER undertakes an investigation into the maximum prices for retail prices for non-contestable customers for a three year period. The final determination for the investigation includes the regulated prices that may be charged by Aurora Energy (Aurora), the incumbent retailer, and an estimate of those prices in the future years of the determination period. Aurora is required to submit its proposed price schedules for approval on an annual basis.

A large proportion of Tasmania's wholesale load is consumed by large industrial users that operate on a virtually continuous basis throughout the year. As a result of this, Tasmania's overall load profile is markedly 'flatter' than that of other states, with smaller and less frequent demand peaks. Tasmania has a cooler climate compared to other jurisdictions, with peak demand occurring in winter rather than summer. The average residential consumption level in Tasmania is higher compared to other jurisdictions, due to the low penetration of natural gas and the colder weather, which results in a higher space heating load.<sup>206</sup>

In May 2012 the Tasmanian Government announced an industry reform package to meet its key priorities of affordable and reliable electricity supply while maintaining public ownership of core infrastructure in the electricity industry.<sup>207</sup> The announcement covers a number of far reaching proposals to restructure all aspects of the Tasmanian electricity market, in particular the introduction of full retail competition by 1 January 2014.

Specific details of the proposals are identified in the individual sections below. Until these proposals have been implemented, all Tasmanian residential electricity customers will continue to pay regulated prices for supply from the incumbent retailer, Aurora.

<sup>206</sup> Office of the Tasmanian Economic Regulator, *Comparison of 2012 Australian Standing Offer Energy Prices*, February 2012.

<sup>207</sup> *Energy for the future - reforming Tasmania's electricity industry,* May 2012, at page 3. A copy of this document is available at www.treasury.tas.gov.au.

#### Figure 3.17 Tasmania at a glance

TASMANIA	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service Providers (TNSPs)	Transend	Tasmanian Government	Yes - regulated by Australian Energy Regulator (AER)	1 July 2009 - 30 June 2014	5
Distribution Network Service Providers (DNSPs)	Aurora Energy	Tasmanian Government	Yes – regulated by Australian Energy Regulator (AER)	1 July 2008 - 30 June 2012	2
Host retailers <sup>a</sup>	Aurora Energy	Tasmanian Government	Retail tariffs for non-contestable residential customers regulated by the Office of the Tasmanian Economic Regulator (OTTER)	1 July 2012 - 30 June 2017	<ul> <li>Carbon price (via the wholesale energy price)</li> <li>Large scale Renewable Energy Target (LRET)</li> <li>Small scale Renewable Energy Scheme (SRES)</li> </ul>
Residential customers b	Total	228,128			
Typical residential consumption levels <sup>c</sup>	7,841kWh				
Typical household consumption <sup>d</sup>	1 person household	6,862kWh			
	2 person household	8,733kWh			
	3 person household	10,064kWh			
	4 person household	12,475kWh			

Sources: Office of the Tasmanian Economic Regulator (OTTER), Tasmanian Treasury, Electricity Supply Association of Australia (ESAA), Australian Energy Regulator (AER).

a. From AER, State of the energy market 2012, at page 120. Data current as at October 2012.

b. As at 30 June 2011, ESAA, Electricity Gas Australia 2012.

c. From information supplied by OTTER.

d. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

#### 3.7.2 Trends in Tasmanian regulated retail electricity prices

#### Box 3.10: Key points for Tasmania

From 2011/12 to 2012/13, regulated prices in Tasmania rose nominally by 11 per cent. This is equivalent to a nominal increase of three c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15, it is estimated that these prices will increase at an average annual rate of three per cent. This is equivalent to a total nominal increase of 1.9 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, changes in the transmission network and wholesale energy components are the main drivers of overall change to the regulated retail price in Tasmania.

	30.0		29.2	30.0	31.1
		26.2			
	25.0				
	20.0		_	_	
	15.0	_	_	_	
	10.0				
	5.0	-	_		
/kWh (nominal)	a <del>n</del> -	Base Year 2011/12	Current Year 2012/13	Projection 2013/14	Projection
					2014/15
Small Scale Renewable	Energy Scheme	5		15	2014/15
Small Scale Renewable Large Scale Renewable	Energy Scheme Energy Target	- 0.8	- 1.2	- 1.2	- 1.3
Small Scale Renewable Large Scale Renewable Retail Margin	Energy Scheme Energy Target	- 0.8 1.0	1.2 1.1	- 1.2 1.1	2014/15 - 1.3 1.1
Small Scale Renewable Large Scale Renewable Retail Margin Retail	Energy Scheme Energy Target	- 0.8 1.0 1.5	1.2 1.1 1.5	- 1.2 1.1 1.5	2014/15 - 1.3 1.1 1.5
Small Scale Renewable Large Scale Renewable Retail Margin Retail Feed-in Tariffs	Energy Scheme Energy Target	- 0.8 1.0 1.5 -	- 1.2 1.1 1.5	1.2 1.1 1.5	2014/15 - 1.3 1.1 1.5 -
Small Scale Renewable Large Scale Renewable Retail Margin Retail Feed-in Tariffs Distribution	Energy Scheme Energy Target	- 0.8 1.0 1.5 - 10.9	- 1.2 1.1 1.5 - 12.5	- 1.2 1.1 1.5 - 12.7	2014/15 - 1.3 1.1 1.5 - 12.9
Small Scale Renewable Large Scale Renewable Retail Margin Retail Retail Feed-in Tariffs Distribution Transmission	Energy Scheme Energy Target	- 0.8 1.0 1.5 - 10.9 3.3	- 1.2 1.1 1.5 - 12.5 4.0	- 1.2 1.1 1.5 - 12.7 4.3	2014/15 - 1.3 1.1 1.5 - 12.9 4.6
Small Scale Renewable Large Scale Renewable Retail Margin Retail Feed-in Tariffs Distribution Transmission Carbon costs	Energy Scheme Energy Target	- 0.8 1.0 1.5 - 10.9 3.3 -	- 1.2 1.1 1.5 - 12.5 4.0 1.0	- 1.2 1.1 1.5 - 12.7 4.3 1.0	2014/15 - - 1.3 1.1 1.5 - 12.9 4.6 1.1

#### Figure 3.18 Tasmania - residential electricity price trends from 2011/12 to 2014/15

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

# Figure 3.19 Tasmania - summary of price movements by component from 2011/12 to 2015

Tasmania	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	21%	7%	1.3	26%
Distribution component	15%	2%	2.0	40%
Wholesale energy component	2%	3%	0.8	17%
Retail component	15%	4%	0.8	16%
Total	11%	3%	4.9	100%

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

#### 3.7.3 Transmission network component

#### Results

Between 2011/12 and 2012/13, the transmission network component increased by 21 per cent (0.7 c/kWh) in nominal terms. This contributed 23 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by seven per cent per year. This equates to a total increase in this component of 0.6 c/kWh. This compares with the total estimated increase of 1.9 c/kWh across all components over this remaining period.

#### Background

The current regulatory control period for Transend commenced on 1 July 2009 and runs until 30 June 2014.

Transmission costs approved by the AER under the current determination reflected requirements to:

- replace and maintain ageing assets;
- meet the new and increased reliability standards and service target performance incentive schedule, including the planned capital projects associated with meeting these requirements; and
- meet the high input costs such as construction materials and labour, as a consequence of the commodity/minerals boom being experienced at the time.<sup>208</sup>

The current determination provides for an increase in the rate of return of about 1.2 per cent compared to the previous regulatory control period.<sup>209</sup>

Australian Energy Regulator, *Transend transmission determination 2009/10-2013/14*, Final decision, 28 April 2009.

<sup>&</sup>lt;sup>209</sup> This is based on the difference in the approved nominal vanilla weighted average cost of capital: ten per cent approved for 2009-2014, compared to 8.8 per cent approved previously: Australian Competition and Consumer Commission, *Tasmanian transmission network revenue cap* 2004-2008/09,

Since the final determination was made, Transend has decreased its sales and demand forecasts compared to forecasts made in the 2011 planning report. These decreases were attributed to the closure or downsizing of industries, the impact of the high Australian dollar, lower gross state product than previously predicted and the impact of higher retail electricity prices generally.<sup>210</sup> Transend has elected to increase annual revenues by less than CPI, rather than to the extent allowed by the AER under its current determination.<sup>211</sup> This will reduce the estimated increases of this component after 2012/13.

As part of its industry reform package, the Tasmanian Government has announced an intention to integrate Transend's transmission network with Aurora's distribution network from 1 January 2014.<sup>212</sup> This is intended to rationalise duplication of, and streamline, functions, resources and services provided by the two businesses.

Due to the late timing of this announcement and the unknown impact of the proposed merger on network costs, the modelling in this report does not incorporate this proposal.

The next regulatory period for Transend commences on 1 July 2014 and the new determination, for the transmission part of the merged entity, will be made under the new network regulation rules following the AEMC's recent network regulation rule determination.<sup>213</sup>

#### 3.7.4 Distribution network component

#### Results

Between 2011/12 and 2012/13, the distribution network component increased by 15 per cent (1.6 c/kWh) in nominal terms. This contributed 54 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by two per cent per year. This equates to a total increase in this component of 0.4 c/kWh. This compares with the total estimated increase of 1.9 c/kWh across all components over this remaining period.

10 December 2003 at page 11; Australian Energy Regulator, *Statement of updates for Transend's final transmission determination*, 14 October 2009, at page 1.

<sup>&</sup>lt;sup>210</sup> Transend Networks Pty Ltd, *Annual Planning Report 2012*, at pages 10, 11. The report also notes, at page 11, that Commonwealth Government climate change policy may lead to further renewable energy plant being built in Tasmania at new locations, which may require augmentation of the existing transmission system in the long term.

<sup>&</sup>lt;sup>211</sup> Department of Treasury and Finance, Tasmania, Electricity reform home page viewed on 14 January 2013, www.electricity.tas.gov.au.

<sup>&</sup>lt;sup>212</sup> Green, B. (Minister for Energy and Resources), *Energy for the future*, Ministerial statement, 15 May 2012.

<sup>&</sup>lt;sup>213</sup> Australian Energy Market Commission, National Electricity Amendment (Economic regulation of network providers) Rule 2012, National Gas Amendment (Price and revenue regulation of gas services) Rule 2012, Rule determination, 29 November 2012.

# Background

The current regulatory control period for Aurora Energy commenced on 1 July 2012, and runs until 30 June 2017. It was the first determination made for Aurora by the AER. The final determination approves a total nominal revenue of \$1,410 million for the period.<sup>214</sup> Aurora's proposed capital investment requirements lower than levels set in the preceding period.<sup>215</sup>

The determination includes an adjustment in the 2012/13 year for the recovery of previously under-recovered allowable revenues of \$52.5 million.<sup>216</sup> This is a revenue adjustment, not a cost pass-through, which should have been recovered from the previous regulatory period.<sup>217</sup> This accounts in part for the higher increase in the distribution network component for 2012/13 shown in the modelling, however the full impact of this recovery has been smoothed over the entire regulatory control period.<sup>218</sup>

Information released by the Tasmanian Government also indicates that Aurora will not seek a merits review of the AER's determination and will operate within the determined allowance.<sup>219</sup>

The current determination provides for a rate of return of 8.3 per cent.<sup>220</sup>

As discussed in section 3.7.3, and as part of its industry reform package, the Tasmanian Government has announced an intention to integrate Aurora's distribution system with Transend's transmission network from 1 January 2014.

### 3.7.5 Wholesale energy component

#### Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by two per cent (0.2 c/kWh) in nominal terms. This contributed seven per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by three per cent per year. This equates to a total increase in this component of 0.6 c/kWh. This compares with the total estimated increase of 1.9 c/kWh across all components over this remaining period.

<sup>214</sup> Australian Energy Regulator, Final distribution determination for Aurora Energy Pty Ltd 2012/13-2016/17, April 2012.

<sup>&</sup>lt;sup>215</sup> Australian Energy Regulator, State of the energy market 2011, at page 63.

<sup>216</sup> Australian Energy Regulator, *Final distribution determination for Aurora Energy Pty Ltd* 2012/13-2016/17. April 2012, at pages viii and 3.

<sup>217</sup> Aurora Energy Pty Ltd, *Regulatory proposal 2012-2017*, at page 226. Aurora Energy Pty Ltd, *Revised regulatory proposal 2012-2017*, at page 130.

<sup>&</sup>lt;sup>218</sup> Department of Treasury and Finance, Tasmania, Electricity reform home page viewed on 14 January 2013, www.electricity.tas.gov.au.

<sup>&</sup>lt;sup>219</sup> Department of Treasury and Finance, Tasmania, Electricity reform home page viewed on 14 January 2013, www.electricity.tas.gov.au.

<sup>220</sup> Australian Energy Regulator, *Final distribution determination for Aurora Energy Pty Ltd* 2012/13-2016/17. April 2012, at page 29.

#### Background

The financial market for generation in Tasmania is currently dominated by Hydro Tasmania, a government owned entity that supplies around 80 per cent of the market. Small volumes of thermal and wind generation are also available.

Basslink<sup>221</sup> provides important subsidiary supply via energy imported from Victoria, which is vital should storage levels fall to critical levels. The volumes that may be imported are constrained by the technical limitations of the cable, which limits the opportunities for contracting with mainland suppliers.<sup>222</sup>

This means that energy is not as actively traded in Tasmania as other NEM jurisdictions.

The regulator's approach to estimating wholesale energy costs is constrained by the provisions of the Tasmanian Price Control Regulations and, until recently, the allowance was set by the regulator at the estimated efficient costs of a notional new generator supplying electricity to non-contestable customers in Tasmania.<sup>223</sup>

On 16 May 2012 the Tasmanian Government amended these regulations to require the regulator to calculate the wholesale energy costs as the average of:

- the LRMC of generation by a notional generator supply to non-contestable customers on mainland Tasmania; and
- the price Aurora Energy would pay to purchase energy in Victoria and transport electricity for the same supply.

This change to the method of calculating wholesale energy costs explains in part the reduction in this component between 2011/12 and 2012/13.<sup>224</sup> For the purposes of this report however, the AEMC has applied a trend derived from Frontier's modelling of the wholesale energy component, based on a stand-alone LRMC approach, for the final two years. This lifts the wholesale energy component for those years.

As half hourly load data was not available, Frontier based Tasmania's residential load shape on the residential load shape for the Powercor distribution area in Victoria. This was considered by Frontier to be the most reasonable proxy.<sup>225</sup>

AEMO has indicated that annual energy and maximum demand forecasts have decreased since the 2011 ESOO forecasts. The reasons for this include the reduction in consumption from large manufacturing and industrial users, increasing penetration of

<sup>&</sup>lt;sup>221</sup> This is a privately owned electricity inter-regional transmission cable which connects Tasmanian supply to Victoria, allowing for trade between the two states.

<sup>222</sup> See Office of the Tasmanian Energy Regulator, '*Investigation of maximum prices for declared retail electrical services on mainland Tasmania*', October 2010, page 22.

Regulation 32.

<sup>&</sup>lt;sup>224</sup> Office of the Tasmanian Energy Regulator, '*Statement of reasons for approval of retail tariffs for non-contestable customers from 1 July 2012 in accordance with the 2010 price determination*', June 2012, at page 10.

<sup>&</sup>lt;sup>225</sup> Frontier Economics, *Future possible retail electricity price movements*, December 2012, at page 12.

solar rooftop panels, the decline in the short term economic growth and consumer response to rising electricity prices and energy efficiency measures.<sup>226</sup>

These factors may have a greater impact on demand and wholesale prices in the Tasmanian market than modelled in this report.

As part of its industry reform package, the Tasmanian Government has recently announced an intention to reform the wholesale market to facilitate the independent regulation of Hydro Tasmania's wholesale market activities by the Tasmanian Economic Regulator from 1 July 2013. This will include oversight of the range of electricity contracts offered by Hydro Tasmania to other market participants, including prices and contract premiums charged.

The Government has indicated that this measure is to ensure that, following the implementation of full retail competition on 1 January 2014, Hydro Tasmania does not use its unique market position as the "company responsible for the most generation output, [with] control of interconnector flows and is the dominant counter-party for wholesale contracts in the Tasmanian market."<sup>227</sup>

### Carbon price

The carbon price is estimated to add around one c/kWh annually to the wholesale energy component in Tasmania throughout the period.<sup>228</sup>

### 3.7.6 Retail component

### Results

Between 2011/12 and 2012/13, the retail component, including the retail environmental scheme obligations, increased by 15 per cent (0.5 c/kWh) in nominal terms. This contributed 16 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by four per cent per year. This equates to a total increase in this component of 0.3 c/kWh. This compares with the total estimated increase of 1.9 c/kWh across all components over this remaining period.

#### Background

Since the 2010 price investigation, Aurora Energy's operating costs have not, and are not expected to increase in real terms over the remainder of the review period.<sup>229</sup> The retail margin comprises 3.8 per cent of the total costs: increases in the other components of the residential electricity price will therefore serve to nominally increase the value of the retail margin.

<sup>226</sup> Australian Energy Market Operator, *National electricity forecasting report 2012 for the NEM*, at pages 7-1, 7-2.

<sup>227</sup> Department of Treasury and Finance, Tasmania, Electricity reform home page viewed on 14 January 2013, www.electricity.tas.gov.au.

<sup>&</sup>lt;sup>228</sup> Frontier Economics, *Possible future retail electricity price movements*, November 2012.

<sup>&</sup>lt;sup>229</sup> See Office of the Tasmanian Energy Regulator, '*Investigation of maximum prices for declared retail electrical services on mainland Tasmania*', October 2010, page 77.

As part of its industry reform package, the Tasmanian Government has announced its intention to introduce full retail competition to the remaining tranche of customers on 1 January 2014. This will involve dividing and selling Aurora Energy's retail customer base in tranches to new retailers, on or before 1 January 2014 to take effect on this date.<sup>230</sup>

Some price regulation will remain after 1 January 2014, for customers that do not wish to move to a market contract, and will continue to be the responsibility of the Tasmanian Economic Regulator.

The Tasmanian Government has also indicated that the methodology for calculating prices has recently been changed to enable cost savings to be funded from the proceeds made by Hydro Tasmania following the introduction of the carbon price. In addition, the current retail pricing determination, which is due to expire on 30 June 2013, will be extended for six months until 1 January 2014.<sup>231</sup>

### Enhanced Renewable Energy Target

The LRET and SRES together are estimated to add an additional 0.8 c/kWh to the retail component in 2011/12, increasing to 1.3 c/kWh in 2014/15.

Tasmania does not have a feed-in tariff or any other jurisdictional environmental energy scheme that contributes to the retail electricity price. Environmental scheme costs are therefore composed of costs imposed by the LRET, SRES, and the carbon price under the Clean Energy legislation.

<sup>230</sup> Department of Treasury and Finance, Tasmania, Electricity reform home page viewed on 14 January 2013, www.electricity.tas.gov.au.

<sup>231</sup> Ibid.

### 3.8 Western Australia (SWIS) summary

#### 3.8.1 General

The wholesale energy market commenced in the Western Australian South Western interconnected system (SWIS) in 2006, following the break-up of Western Power into four government owned organisations: Verve Energy (generation), Western Power (networks), Synergy (retail) and Horizon Power (rural supply). Due primarily to its size, no energy market operates in the North Western interconnected System (NWIS).

Residential electricity prices are set by the Western Australian Government, by way of gazette. In July 2011, the Western Australian Treasurer requested that the Economic Regulation Authority (ERA) undertake an inquiry into the efficiency of Synergy's costs and electricity tariffs. This was the first inquiry by the ERA into Synergy's efficient costs. The final report was published on 5 June 2012 and tabled in Parliament on 3 July 2012.

The final report will help inform the Western Australian Government's decision-making in relation to its budget processes and future changes to electricity tariffs. There is no ongoing formal requirement for Government to seek the views of the ERA in determining regulatory tariffs as part of the State Budget process.<sup>232</sup>

Between 1997 and 2007, residential electricity prices remained unchanged in accordance with the Western Australian Government's policy. Since 2008, electricity prices have been increased by up to 57 per cent for residential customers, reflecting the catch up with inflation, the higher cost of fuel used for generation, increased network operating costs following a period of under investment and increases attributable to Commonwealth environmental schemes.<sup>233</sup>

The most recent inquiry request issued to the ERA was to determine efficient cost reflective electricity prices for Synergy for the period 2012/13 to 2015/16. The final report was published on 4 July 2012.<sup>234</sup> The actual cost breakdown for Synergy was not made available in the report, although the ERA did publish its own forecast of cost reflective electricity prices. The ERA noted<sup>235</sup> that a move to cost reflective prices would impose a material increase to regulated prices, in addition to the cost increases imposed as a result of the carbon price.

<sup>&</sup>lt;sup>232</sup> From information provided by the Public Utilities Office.

<sup>&</sup>lt;sup>233</sup> Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs,* final report, 4 July 2012.

<sup>&</sup>lt;sup>234</sup> Economic Regulation Authority, *Inquiry in to the efficiency of Synergy's costs and electricity tariffs,* final report, 4 July 2012.

<sup>&</sup>lt;sup>235</sup> Ibid, at page 11)
### Figure 3.20 Western Australia at a glance

WESTERN AUSTRALIA – South Western Interconnector System (SWIS)	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Transmission Network Service	Western Power	Western Australia	Yes - regulated by the Economic	1 July 2012 -	
Providers (TNSPs)	- 100	Government	Regulation Authority	30 June 2017	
Distribution Network Service	Western Power	Western Australia	Yes - regulated by the Economic	1 July 2012 -	<ul> <li>Tariff equalisation contribution</li> </ul>
Providers (DNSPs)	2000 - 20	Government	Regulation Authority	30 June 2017	
Host retailers <sup>a</sup>	Synergy	Western Australia	Retail tariffs for non-contestable	Annually	<ul> <li>Carbon price (via the wholesale energy price)</li> </ul>
		Government	(including residential) customers are		<ul> <li>Large scale Renewable Energy Target (LRET)</li> </ul>
			set by the Western Australian Government		Small scale Renewable Energy Scheme (SRES)
Residential customers <sup>b</sup>	Total	946,513			
Typical residential consumption levels <sup>c</sup>	5,801kWh				
Typical household consumption <sup>d</sup>	1 person household	4,107kWh			
	2 person household	5,140kWh			
	3 person household	6,173kWh			
	4 person household	7,206kWh			

Sources: Department of Finance, Electricity Supply Association of Australia (ESAA), Economic Regulation Authority (ERA).

a. From Western Australian Department of Finance, www.finance.wa.gov.au, viewed on 29 January 2013.

b. As at 30 June 2011, ESAA, Electricity Gas Australia 2012.

c. From information provided by the Department of Finance.

d. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

Retail electricity prices in Western Australia are also influenced by the levels of subsidisation for network and retail services. These are set by the Government independently, rather than as a percentage of any particular price component, on an annual basis.

### 3.8.2 Trends in Western Australia regulated retail electricity prices

### Box 3.11: Key points for Western Australia

From 2011/12 to 2012/13, regulated prices in Western Australia rose nominally by eight per cent. This is equivalent to a nominal increase of 2.2 c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will increase at an average annual rate of two per cent. This is equivalent to a total nominal increase of 1.3 c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, changes in the transmission and distribution network components are the main drivers of overall change to the regulated retail price in Western Australia.

35.0				
30.0		28.4	29.2	29.7
54.00.0006	26.2			(F) (1)
25.0				
20.0				- a - a
15.0	_			
10.0		_	_	
5.0		_	_	-
c/kWh (nominal) -	Rese Vers	Current Varia	Designities	Designation
	2011/12	2012/13	2013/14	2014/15
Small Scale Renewable Energy Scheme	0.5	0.7	0.3	0.3
Large Scale Renewable Energy Target	0.4	0.8	0.9	0.9
Retail Margin	0.9	1.0	1.0	1.0
Retail	1.6	1.7	1.7	1.7
TEC	1.9	1.2	1.3	1.3
Feed-in Tariffs	-		-	5 I
Distribution	7.0	7.2	7.6	8.1
Transmission	2.0	2.0	2.3	2.6
Transmission     Carbon costs	2.0	2.0 2.1	2.3 2.1	2.6 1.9

# Figure 3.21 Western Australia - residential electricity price trends from 2011/12 to 2014/15

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

## Figure 3.22 Western Australia - summary of price movements by component from 2011/12 to 2015

Western Australia	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	3%	14%	0.7	19%
Distribution component	-6%	5%	0.4	12%
Wholesale energy component	17%	0%	2.0	57%
Retail component	19%	-2%	0.5	13%
Total	8%	2%	3.5	100%

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

### 3.8.3 Transmission network component

### Results

Between 2011/12 and 2012/13, the transmission network component increased by three per cent in nominal terms. This had an immaterial impact on the retail price but contributed two per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by 14 per cent per year. This equates to a total increase in this component of 0.6 c/kWh. This compares with the total estimated increase of 1.3 c/kWh across all components over this remaining period.

### Background

Transmission and distribution network allowances in the SWIS are determined by the ERA in consultation with the incumbent network service provider, Western Power.

Third party access to the transmission and distribution networks in the SWIS, and the provision of network services are governed by the Western Australian Electricity Networks Access Code, which was implemented in 2004. It prescribes the commercial arrangements, including the access charges that generators and retailers must pay to use Western Power's networks.

Western Power's most recently proposed third party access arrangement, referred to as AA3, for 2012 - 2017 was not approved and finalised until November 2012 following the publication of a further final decision by the ERA.<sup>236</sup>

The revenue cap for the first year of AA3 applies from 1 July 2012, although the access arrangement and price are not effective until 1 February 2013, with the current arrangements under the previous access arrangement, AA2, continuing to apply until then. The ERA notes that the current price list has not been changed since

<sup>&</sup>lt;sup>236</sup> Economic Regulation Authority, *Western Power's proposed revised access arrangement for the Western Power network*, 29 November 2012.

1 July 2011.<sup>237</sup> Given this, the network increases for 2012/13 will be higher than originally forecast, to incorporate the adjustment for the under-recovery in 2011/12. Average charges for the remainder of the period (2013/14 -2016/17) are forecast to increase broadly in line with CPI.<sup>238</sup>

A price list effective from that date has been approved, though at the time of this report has not been published by Western Power and therefore has not been included in estimations of potential price movements for 2012/13.

Network prices in the SWIS also reflect the Government's uniform tariff policy which ensures that there is a uniform price for residential electricity supply across Western Australia. Network customers located in the SWIS are levied an additional amount in the form of the Western Australian Tariff Equalisation Contribution (TEC), which is paid to Horizon Power, the network service provider in the NWIS. The TEC funds the difference between the cost of supplying electricity in the SWIS and the cost of supplying it outside of the SWIS.

The Western Australian Independent Market Operator (IMO) noted that the transmission system is reaching capacity in several locations due to the increase in overall electricity demand, requests for new generation connections and the accommodation of differing energy flows across the system.<sup>239</sup>

Western Power is seeking to address these constraints through a range of augmentations, the most significant being the Western Australian Mid-West Energy Project (MWEP). This project is to build a new high voltage transmission line to line Perth with Geraldton and the Mid-West. According to Western Power, this is the largest electricity infrastructure project ever undertaken in Western Australia. Construction on the southern end of the project commenced in February 2012.<sup>240</sup>

### 3.8.4 Distribution network component

### Results

Between 2011/12 and 2012/13, the distribution network component decreased by six per cent (0.5 c/kWh) in nominal terms.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by five per cent per year. This equates to a total increase in this component of 0.9 c/kWh. This compares with the total estimated increase of 1.3 c/kWh across all components over this remaining period.

### Background

Although transmission and distribution network services are identified as individual components, in the SWIS both services are provided by Western Power, and therefore

<sup>&</sup>lt;sup>237</sup> Economic Regulation Authority, *Western Power's proposed revised access arrangement for the Western Power network*, 29 November 2012.

<sup>238</sup> Ibid. The ERA also notes that as Western Power is revenue capped, these forecasted increases may change if demand differs from that forecast, and depending on a final decision on pass-through by the Western Australian Government.

<sup>&</sup>lt;sup>239</sup> Independent Market Operator, *Statement of opportunities*, June 2012, at pages 62, 63.

<sup>240</sup> Western Power, Annual Report 2011, page 10.

discussion of this component is included in the discussion of the transmission network component, above.

Western Australia currently has two small scale renewable energy schemes in place,<sup>241</sup> however neither currently directly impact on electricity prices.

### 3.8.5 Wholesale energy component

### Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by 17 per cent (two c/kWh) in nominal terms. This contributed 92 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15 it is estimated that the annual average increase, and the impact on the price, of this component will be immaterial. This compares with the total estimated increase of 1.3 c/kWh across all components over this remaining period.

## Background

As half hourly load data was not available, Frontier based Western Australia's residential load shape on the residential load shape for South Australia. This was considered by Frontier to be the most reasonable proxy. The modelling also reflects the relatively assumed higher capital costs of generation and fuel prices in Western Australia, compared to other jurisdictions.<sup>242</sup>

The IMO has recently reduced its demand forecasts compared to previous years.<sup>243</sup> Factors cited as contributing to the decline in demand include:

- lower than forecasted industrial consumption: this is largely due to a lack of demonstrable progress being made with respect to four proposed major mining projects;
- recalibration of the rate of new installations of air conditioning units, and the rate of utilisation, downwards compared to previous forecasts;<sup>244</sup> and
- relatively flat electricity demand in the SWIS, due to an increase in solar rooftop panels, consumer response to rising electricity costs and energy efficient measures and the impact of restricted availability and increased costs of finance since the onset of the global financial crisis, on development activity.

<sup>&</sup>lt;sup>241</sup> These schemes are a feed -in tariff scheme to encourage the take up of residential photo voltaic systems (suspended in August 2011 when the installed capacity cap was reached) and the Renewable Energy Buyback Scheme which provides 'value based' payments, based on the value that the energy provides to the retailer, to residents for energy exported from eligible renewable energy systems.

Frontier Economics, *Future possible retail electricity price movements*, December 2012, at pages 12, 26, 27.

<sup>&</sup>lt;sup>243</sup> Independent Market Operator, *Statement of opportunities*, June 2012, at pages 4-5.

<sup>&</sup>lt;sup>244</sup> Ibid at page 42-43. This recognises that the rate of non-SWIS and replacement installations may have been higher than previously recognised.

These factors, together with potential new load and generation capacity following completion of the MWEP may have a greater impact on demand and wholesale prices in the Western Australia market than modelled in this report.<sup>245</sup>

Compared with other jurisdictions, the wholesale energy component is relatively high in Western Australia, and increasing wholesale prices have had a greater impact on the residential electricity price. These higher costs reflect the higher fuel costs assumed in Western Australia. In particular the differential between wholesale electricity prices in Western Australia and other jurisdictions is the result of a number of factors:

- higher coal and natural gas prices in Western Australia, due to competition for these resources with the mining industry, and robust international demand for liquefied natural gas. As coal prices typically shadow natural gas prices in Western Australia, the difference between coal and natural gas prices remains smaller than in other jurisdictions;
- the relatively small scale of the Western Australian market, which is not interconnected with the rest of the country, which results in higher wholesale electricity prices. This is because all of Western Australia's electricity demand must be met from generation within Western Australia;
- the small Western Australian market also has resulted in relatively small scale new capacity, which limits the economies of scale that can be achieved with larger generating units; and
- until recently, labour and materials costs have also been generally higher in Western Australia, due to increased competition for these resources resulting from the commodities boom.

### Carbon price

The carbon price is estimated to add around two c/kWh annually to the wholesale energy component in Western Australia from 2012/13 to 2014/15.

## 3.8.6 Retail component

## Results

Between 2011/12 and 2012/13, the retail component increased by 19 per cent (0.7 c/kWh) in nominal terms. This contributed 30 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will decrease, on average, by two per cent per year. This equates to a total decrease in this component of 0.2 c/kWh. This compares with the total estimated increase of 1.3 c/kWh across all components over this remaining period.

## Background

In relation to the regulation of retail prices, the ERA role is in informing the Government of the efficient costs and electricity prices of the incumbent retailer, Synergy. The final residential retail price is set by the Western Australia Government.

<sup>245</sup> See section 3.8.3

The Western Australian Government subsidises supply costs through a tax-payer funded community service obligation (CSO) payment to Synergy. This funds the difference between the actual price of supplying energy in the SWIS, and the price paid by consumers. These payments are funded from the Western Australian Consolidated Accounts. In the SWIS this amounted to a subsidy of \$317 million in 2011/12, as reported by Synergy.<sup>246</sup> The net CSO payments paid to Synergy and Horizon Power to offset the shortfall in electricity prices paid by customers, relative to the cost of providing electricity for 2012/13, was approximately \$371 million.<sup>247</sup>

### Enhanced Renewable Energy Target

The LRET added an additional 0.4 c/kWh annually to the retail component in 2011/12 and is estimated to increase to 0.9 c/kWh by 2014/15.

The SRES added an additional 0.5 c/kWh to the retail component in 2011/12, but this is estimated to decrease to 0.3 c/kWh by 2014/15. This is attributed to the general reduction in feed-in tariffs paid to new participants under the various jurisdictional schemes, and cessation of the Solar Credits multiplier on 1 January 2013.

<sup>246</sup> Synergy, Annual report 2011/12.

<sup>&</sup>lt;sup>247</sup> Western Australian Treasury, *Budget 2012-13*, paper no. 3 - Economic and fiscal outlook, 17 May 2012 at page 309.

## 3.9 Northern Territory summary

### 3.9.1 General

Full retail contestability has been introduced to Northern Territory customers on a progressive basis since 2000, and in 2010 all customer tranches were made fully contestable.

As was noted by the Northern Territory Government in its submission to the *Draft Energy White Paper*,<sup>248</sup> there are a range of demographic, geographic and economic factors that present a barrier to the establishment of a fully competitive market in the Northern Territory.<sup>249</sup> These factors also contribute to the relatively high costs of electricity supply in the Northern Territory.

Supply to regional and remote areas is subsidised under the Government's uniform tariff policy through Community Service Obligation payments for residential and small business customers. This ensures that eligible customers pay either uniform or subsidised tariffs, and are met by community service obligation payments made to Power and Water Corporation (PWC). They do not otherwise impact directly on the final retail price. The policy is also supported by the Government accepting a lower than normally commercially acceptable rate of return on its investment in PWC.<sup>250</sup> Because of this, the electricity prices currently paid by residential customers do not currently reflect the actual costs of supply.

At the time of drafting the Northern Territory Government's submission, it was the position that there was insufficient market activity to justify the easing of this policy until the emergence of a competitive market.<sup>251</sup>

The Northern Territory supply side is dominated by PWC, which is a vertically integrated government owned corporation with generation, network and retail business units. The Northern Territory Government has established ring fencing legislation to help ensure that the market dominance due to this extensive vertical integration is not used in an anti-competitive manner.

Both the generation and network businesses of PWC are required to provide services to all retailers on a non-discriminatory basis.<sup>252</sup>

<sup>&</sup>lt;sup>248</sup> Northern Territory submission on the *Draft Energy White Paper*, March 2012. This may be accessed from the Department of Resources, Energy and Tourism website, www.ret.gov.au.

<sup>&</sup>lt;sup>249</sup> See Appendix A for a description of the Northern Territory electricity market.

<sup>&</sup>lt;sup>250</sup> Utilities Commission, 2014-19 Network price determination, Framework and approach consultation paper, June 2012.

<sup>&</sup>lt;sup>251</sup> Northern Territory submission on the *Draft Energy White Paper*, March 2012, at page 6. This may be accessed from the Department of Resources, Energy and Tourism website, www.ret.gov.au.

<sup>&</sup>lt;sup>252</sup> Utilities Commission, 2014-19 Network price determination, Framework and approach consultation paper, June 2012.

### Figure 3.23 Northern Territory at a glance

NORTHERN TERRITORY	Organisations	Ownership	Regulation of prices/ revenue	Current regulatory period	Relevant federal and jurisdictional schemes/ programmes
Network Service Providers (NSPs)	Power and Water Corporation	Northern Territory Government	Yes – regulated by Northern Territory Utilities Commission	1 July 2009 - 30 June 2014	·-
Host retailers <sup>a</sup>	Power and Water Corporation	Northern Territory Government	Retail tariffs for residential customers are set by the Northern Territory Government via electricity	Current price orders expire on 30 June 2013	Carbon price (via the wholesale energy price)
			pricing orders		<ul> <li>Large scale Renewable Energy Target (LRET)</li> </ul>
					Small scale Renewable Energy Scheme (SRES)
Residential customers <sup>b</sup>	Total	72,338			
Typical residential consumption levels <sup>c</sup>	8,904kWh				
Typical household consumption <sup>d</sup>	1 person household	6,266kWh			
	2 person household	7,806kWh			
	3 person household	9,345kWh			
	4 person household	10,885kWh			

Sources: Northern Territory Treasury, Northern Territory Utilities Commission (NTUC), Australian Energy Regulator (AER).

a. From the NTUC website, www.utilicom.nt.gov.au, viewed on 29 January 2013.

b. From information provided by the Northern Territory Treasury.

c. From information provided by the Northern Territory Treasury.

d. From ACIL Tasman, Electricity Bill Benchmarks for residential customers, a report prepared for the Consumer Information Implementation Committee, December 2011. Provided for comparison purposes only.

PWC has been the sole retailer operating in the Northern Territory for a number of years but the market is currently open for other retailers to supply electricity to Northern Territory consumers. Retail licences have recently been granted to new entrants, QEnergy in 2011, and ERM Power in 2012.

The Government is also continuing to review market arrangements with the Northern Territory Utilities Commission (NTUC) already having completed a number of market reviews. The underlying position in these reviews is for greater alignment, where possible, with principles adopted in the NEM,<sup>253</sup> however the future direction of further market development, and therefore retail pricing policies, is also dependent on the policies of the recently elected Northern Territory Government.

### 3.9.2 Trends in Northern Territory regulated retail electricity prices

Modelling of the wholesale energy component was not undertaken for the Northern Territory due to the localised and small scale character of the market. For the purposes of estimating price movements through until 2014/15, price components were based on information provided by the Northern Territory Government and adjusted, where necessary, by CPI.

### Box 3.12: Key points for the Northern Territory

From 2011/12 to 2012/13, regulated prices in the Northern Territory rose nominally by ten per cent. This is equivalent to a nominal increase of 2.1 c/kWh in the total regulated electricity price over that period.

From 2012/13 to 2014/15 it is estimated that these prices will increase at an average annual rate of 16 per cent. This is equivalent to a total nominal increase of eight c/kWh in the regulated electricity price over this remaining period.

From 2012/13 to 2014/15, change in the wholesale energy component is the main driver of overall change to the regulated retail price in the Northern Territory.

<sup>&</sup>lt;sup>253</sup> See, for example, comments by the Utilities Commission to this effect in its *Review of electricity system planning and market operation roles and structures*, Final report, December 2011.

<sup>102</sup> Possible future retail electricity price movements: 1 July 2012 to 30 June 2015

Figure 3.24 Northern Territory - residential electricity price trends from 2011/12 to 2014/15



#### Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

## Figure 3.25 Northern Territory - summary of price movements by component from 2011/12 to 2015

Northern Territory	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Distribution component	5%	4%	1.1	10%
Wholesale energy component	13%	21%	8.9	88%
Retail component	10%	21%	0.2	2%
Total	10%	16%	10.1	100%

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

### 3.9.3 Network component

### Results

The regulatory framework in the Northern Territory does not make any distinction between the transmission and distribution networks, with both services being bundled under the general heading of 'network services'.

Between 2011/12 and 2012/13, the network component increased by five per cent (0.4 c/kWh) in nominal terms. This contributed 17 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by four per cent per year. This equates to a total increase in this component of 0.7 c/kWh. This compares with the total estimated increase of eight c/kWh across all components over this remaining period.

### Background

The current network regulatory control period commenced on 1 July 2009 and runs for five years, until 30 June 2014. Network price regulation is the responsibility of the NTUC and is carried out in accordance with the provisions of Part 3 of the *Electricity Networks (Third Party Access) Code* (Northern Territory).

In its final determination for the current regulatory control period, the NTUC outlined that there would be an annual average increase of 3.4 per cent plus CPI adjustments over the period. This contrasted with the average annual decreases experienced over the last two reset periods. This increase was lower than the increase sought by PWC and reflected what the NTUC believed to be efficient operating costs, taking into account real increases in network costs experienced in recent years.<sup>254</sup>

PWC is currently in the midst of its five year utility infrastructure investment programme, worth around \$1.5 billion.<sup>255</sup> The programme includes capital works as well as maintenance and repairs and is the largest such programme ever undertaken in the Northern Territory.

PWC is also continuing on its capital investment programme, with the building and commissioning of several new substations, the installation of a third gas turbine at the Weddell Power Station and major maintenance and refurbishment of units and associated infrastructure at Channel Island. These projects are proposed to improve the reliability of supply and meet increasing demand in the Northern Territory.

The NTUC has commenced its regulatory reset process for the next period, commencing 1 July 2014. A framework and approach decision paper was published in December 2012, indicating a move away from a price cap form of regulation, as applied

<sup>254</sup> Northern Territory Utilities Commission, *Networks pricing: 2009 regulatory reset*, Final determination, March 2009 at page 19. The Davies Enquiry was established by the Northern Territory Government in response to concerns about the continued security of supply to the northern suburbs of Darwin, following a series of equipment failures at the Casuarina Zone Substation and surrounding network in late September and early October 2008. The enquiry made 11 recommendations to improve maintenance effectiveness, asset management, and leadership and supervision.

<sup>&</sup>lt;sup>255</sup> Power and Water Corporation, *Annual report 2011*. This investment figure extends across networks, power stations as well as water and sewerage infrastructure.

in the current determination to a revenue cap approach. A single determination will be made for all regulated networks operating in the Northern Territory, rather than each having an individual determination made.

## 3.9.4 Wholesale energy component

## Results

Between 2011/12 and 2012/13, the wholesale energy component, including the carbon price, increased by thirteen per cent (1.7 c/kWh) in nominal terms. This contributed 81 per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by 21 per cent per year. This equates to a total increase in this component of 7.2 c/kWh. This compares with the total estimated increase of eight c/kWh across all components over this remaining period.

## Background

The increase in this component shown in the modelling is attributable to an apportioning, to the generation price and carbon cost, of the recent 30 per cent increase to the regulated price announced by the Northern Territory Government in November 2012. This is discussed in more detail in section 3.9.5.

There is no wholesale market in operation in the Northern Territory and purchases of wholesale energy from PWC, via bilateral contracts, are at cost reflective prices.

The NTUC maintains oversight of PWC's wholesale electricity prices, guided by the objective that individual contestable customers pay no more than the reasonable long-run cost of supplying them with wholesale energy, including a return on capital invested commensurate with the commercial and regulatory risks involved. This function is likely to be retained "for as long as [PWC's generation] business is not subject to competition or the tangible threat of competition."<sup>256</sup>

## Carbon price

The carbon price added around 1.3 c/kWh to the wholesale energy component in 2012/13, and is estimated to add almost two c/kWh annually from 2013/14 to 2014/15.

## 3.9.5 Retail component

## Results

Between 2011/12 and 2012/13, the retail component increased by ten per cent in nominal terms. This contributed one per cent to the overall change in regulated residential electricity prices over that year.

From 2012/13 to 2014/15, it is estimated that this component will increase, on average, by 21 per cent per year. This equates to a total increase in this component of 0.1 c/kWh. This compares with the total estimated increase of eight c/kWh across all components over this remaining period.

<sup>256</sup> Northern Territory Utilities Commission website, www.utilicom.nt.gov.au, viewed on 29 January 2013.

### Background

Retail electricity prices to customers with annual consumption of less than 750MWh are set by the Northern Territory Government through Electricity Pricing Orders, although under full retail contestability, all customers can obtain supply from another supplier if one is available, provided that the property to be supplied has an interval meter installed.

In November 2012 the newly elected Northern Territory Government announced a 30 per cent increase in the overall regulated price for regulated residential customers, effective from 1 January 2013. This increase has been identified by the Government as a 'one-off' increase, with similar increases being imposed on PWC's other utility services of water and sewerage, and is intended to both contribute to improving the financial stability of PWC, as well as bring retail prices in line with the national average.<sup>257</sup>

This increase has been apportioned between the retail and the wholesale energy components in 2012/13. These components were adjusted by CPI in 2013/14 and 2014/15.

<sup>&</sup>lt;sup>257</sup> Northern Territory Government media release, 20 November 2012.

### 3.10 National summary

The national summary is an aggregate of the jurisdictional modelling outcomes.

The graph in Figure 2.26 shows the national price movements, estimated in nominal terms, between the base year (2011/12) to the final year (2014/15). It provides a breakdown of the price by individual components and sub-components, in c/kWh.



Figure 3.26 National - residential electricity price trends from 2011/12 to 2014/15

### Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Retail component values are inclusive of the Victorian wholesale energy component.

The table in Figure 3.27 presents the same information but aggregated into the four major price components used in this report. The table in Figure 3.28 summarises the percentage price movements between the base year (2011/12) to the final year (2014/15).

## Figure 3.27 National - summary of price movements by component in c/kWh from 2011/12 to 2014/15

National	2011/12	2012/13	2013/14	2014/15
Transmission component	1.9	2.4	2.6	2.8
Distribution component	9.9	11.0	11.8	12.4
Wholesale energy component	9.7	11.0	10.7	11.1
Retail component	4.3	5.1	4.9	5.1
	25.9	29.6	30.0	31.3

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Retail component values are inclusive of the Victorian wholesale energy component.

# Figure 3.28 National - summary of percentage price movements by component from 2011/12 to 2014/15

National	Nominal percentage increase between 2011/12 - 2012/13	Average annual increase between 2012/13 - 2014/15	Nominal price increase between 2011/12 - 2014/15 c/kWh	Percentage of total price increase attributable to component
Transmission component	27%	6%	0.8	15%
Distribution component	11%	6%	2.5	46%
Wholesale energy component	14%	0%	1.4	25%
Retail component	17%	0%	0.7	13%
Total	14%	3%	5.4	100%

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Retail component values are inclusive of the Victorian wholesale energy component.

The table in Figure 3.29 presents several layers of information for comparative purposes:

- Part A sets out the nominal national and jurisdictional residential prices in the base year (2011/12), the current year (2012/13) and the final year (2014/15) in c/kWh. It also identifies the total increase in the nominal price from the base year to the final year, and presents the average annual rate of change from the base year to the final year, and from the current year to the final year;
- Part B sets out the total nominal change in the residential price between the base year and the final year, that is the difference between the final year and the base year prices, and the contribution of each component to this change, in c/kWh; and
- Part C sets out the total nominal change in the residential price between the current year and the final year, that is the difference between the final year and the current year prices, and the contribution of each component to this change, in c/kWh.

#### Figure 3.29 National summary of future possible residential electricity price movements 2011/12 to 2014/15

	National	Queensland (see note 4 below)	New South Wales (see note 5	Australian Capital Territory	Victoria (see notes 3 & 6 below)	South Australia	Tasmania	Western Australia	Northern Territory
A. Comparison of nominal residential electricity prices b	ewteen 2011/12 - 3	2014/15							
Base year (2011/12) price (c/kWh)	25.9	22.1	25.4	16.9	28.8	29.9	26.2	26.2	21.7
Current year (2012/13) price (c/KWh)	29.6	25.6	30.4	19.1	31.9	33.7	29.2	28.4	23.8
Final year 2014/15 price (c/kWh)	31.3	27.9	31.0	20.2	35.2	33.3	31.1	29.7	31.8
Total increase (c/kWh)	5.4	5.8	5.5	3.3	6.5	3.4	4.9	3.5	10.1
Average annual rate of change from base year	7%	8%	7%	6%	7%	4%	6%	4%	14%
Average annual rate of change from current year	3%	4%	1%	3%	5%	-1%	3%	2%	16%
B. Nominal change from base year (2011/12) to final ye	ear (2014/15) of ea	ch component in c/	kWh						
Transmission	0.8	0.2	1.9	0.5	0.1	0.7	1.3	0.7	0.0
Distribution	2.5	3.4	1.3	1.4	3.3	5.0	2.0	0.4	1.1
Wholesale	1.4	0.7	2.0	1.5	2.0	-2.1	0.8	2.0	8.9
Retail	0.7	1.5	0.3	0.0	5.0	-0.3	0.8	0.5	0.2
Total (c/kWh)	5.4	5.8	5.5	3.3	6.5	3.4	4.9	3.5	10.1
C. Nominal change from current year (2012/13) to final	year (2014/15) of (	each component in	c/kWh						
Transmission	0.3	0.1	0.5	0.2	0.1	0.4	0.6	0.6	0.0
Distribution	1.4	1.9	0.4	1.0	2.4	1.9	0.4	0.9	0.7
Wholesale	0.0	0.4	-0.2	-0.1		-2.2	0.6	0.0	7.2
Retail	0.0	-0.1	-0.1	0.0	0.9	-0.5	0.3	-0.2	0.1
Total (c/kWh)	1.7	2.3	0.5	1.2	3.4	-0.4	1.9	1.3	8.0

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Retail component values are inclusive of the Victorian wholesale energy component. The grouping of these values for Victoria is indicated by the shaded area.

4. Queensland prices and component values do not incorporate recent pass through approvals by the AER in respect of feed-in tariff costs for 2011/12, or retail price proposals under the QCA's draft retail price determination for 2013/14.

5. New South Wales transmission network component values reflect distribution pricing rather than transmission price rises.

6. Victorian prices shown are based on published standing offers and are likely to overstate the actual prices paid by representative residential customers receiving supply on market offers. According to the Essential Services Commission in Victoria, based on 2011/12 prices, the published standing offers are, on average, 12 per cent higher than current market offers. This would reduce the estimated 2011/12 Victorian standing offer price of 28.8 c/kWh by 3.1 c/kWh, resulting in an average market offer price of 25.7 c/kWh.

#### How to read this table:

Part A lists the residential retail electricity prices in c/kWh for each jurisdiction and nationally as at the base year (2011/12), the current year (2012/13) and as modelled for the final year of this report (2014/15). It also sets out the average annual rate of change between the base year and the final year, and the current year and the final year.

Part B sets out the nominal change of each component of the retail price, in c/kWh, from the base year to the final year of this report.

Part C sets out the nominal change of each component of the retail price, in c/kWh, from the current year to the final year of this report.

For example, at a national level, the residential electricity price increased nominally by 5.3c/kWh between the **base year** and the final year. The average annual rate of change over this period was seven per cent. By comparison, the annual rate of change between the **current year** and the final year was three per cent.

Of the total price increase of 5.4c/kWh:

0.8c/kWh is attributable to change in the transmission component; 2.5c/kWh is attributable to change in the distribution component;

· 1.3c/kWh is attributable to change in the wholesale component, and 0.7c/kWh is attributable to change in the retail component.

## 4 General approach

*This section provides a high level overview as to the general approach taken in this report. For more information, the models used by the AEMC are available on www.aemc.gov.au.* 

In this report, retail electricity prices are broken down into the following cost components:

- *transmission network costs*: this covers the transmission network use of system costs;
- *distribution network costs*: this covers the distribution network use of system costs, and includes any metering costs as well as costs associated with feed-in tariff schemes, as these costs are recovered by distribution networks;
- *wholesale energy costs*: this covers the costs associated with the wholesale purchase of energy, as well as market fees and payments, losses associated with those energy purchases and the costs associated with the Commonwealth Clean Energy legislation (i.e. the carbon price); and
- *retail costs*: this covers the retail operating costs, retail margin and retail compliance costs associated with the remaining various jurisdictional energy efficiency and other environmental schemes.

The terms of reference require the modelling to be based, as far as possible, on the approaches taken by the jurisdictional regulators in setting their respective regulated retail prices.

Modelling in this report has been developed by a combination of economic and market based modelling, and more general modelling. Individual price components have been based, wherever possible, on data and information obtained from national and jurisdictional regulatory determinations and decisions. Where data and information could not be obtained from these sources, then estimates have been based on:

- the methods of modelling and adjustment as applied by the relevant regulators; or
- economic modelling provided by a consultant; or
- where there has been uncertainty around the estimation process to be adopted by the jurisdictional regulator, and where these adjustments were not modelled by a consultant, then costs have been adjusted by CPI (2.5 per cent).<sup>258</sup>

The exceptions to the above are in relation to South Australia feed-in tariff prices, information for which was provided by SA Power Networks, and in Victoria, carbon price information was provided by the Commonwealth Department of Climate Change and Energy Efficiency.

Due to jurisdictional differences, a uniform approach to the collation of data and methodology across all states and territories was not possible. To provide greater

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<sup>&</sup>lt;sup>258</sup> This is the midpoint of the Reserve Bank of Australia (RBA)'s inflation target. The RBA website (www.rba.gov.au/inflation/inflation-target) states: "The Governor and the Treasurer have agreed that the appropriate target for monetary policy in Australia is to achieve an inflation rate of 2–3 per cent, on average, over the cycle."

transparency the AEMC has chosen to publish the model developed for this year's report. This can be accessed on the AEMC's website.<sup>259</sup> The following tables therefore provide a very high level indication of the data sources used and the general approach taken to model the different price components for jurisdictions.

## 4.1 National Electricity Market jurisdictions

### Data sources and general approach to modelling

The retail electricity prices estimated for Victoria in this report are based on published retail standing offers and may not be directly comparable with regulated offers in other jurisdictions.

Standing offers differ in nature from the regulated retail prices in that they are independently set by individual retailers, rather than being determined by a jurisdictional regulator or otherwise set by a jurisdictional government. Standing offers tend to overstate the actual prices paid by representative residential customers receiving supply on market offers.

According to the Essential Services Commission in Victoria, the standing offers in that state are, on average, 12 per cent higher than current market offers.<sup>260</sup> This would reduce the estimated 2012/13 Victorian standing offer price of 31.9 c/kWh by 3.4 c/kWh, resulting in an average market offer price of 28.5 c/kWh.

www.aemc.gov.au.

<sup>260</sup> Essential Services Commission, *Energy retailers comparative performance report - pricing 2011/12,* September 2012 at page 43.

## Figure 4.1 National Electricity Market - Summary of data sources and approach

National Electricity Market					
Data type	Source	Methodology for projected adjustments			
Transmission and distribution network	Current network regulatory control period	For years not covered by the current network regulatory control period			
costs - including any metering costs	Australian Energy Regulator, relevant final network determinations. Additional information from final determination reports from jurisdictional regulators.	CPI – X from the final year of the network regulatory control period would be applied, except where the X factor is a positive value in the final year, in which case CPI only applied. The growth factor is also applied for transmission networks.			
Feed-in tariff costs	2011/12-2012/13	2013/14-2014/15			
	Australian Energy Regulator, relevant final network determinations	In accordance with forecasted costs indicated in the relevant final network determinations, then projected adjustments based on CPI.			
	South Australia: SA Power	Based on advice provided.			
	New South Wales: Information from IPART and NSW Treasury budget papers.	New South Wales: Projected adjustments based on advice from NSW Department of Trade and Industry and NSW Treasury.			
Wholesale energy costs	2011/12-2012/13	2013/14-2014/15			
<ul> <li>including carbon price</li> </ul>	Final determination reports from jurisdictional regulators, except for Victoria where modelling from previous year was applied.	Using either: - modelling provided by Frontier Economics, generally in accordance with the methodology applied or proposed to be applied by the relevant jurisdictional regulator; or - trend derived from the Frontier modelling; or - CPI; or - based on information provided by the regulator or other government body, or a market participant.			
Retail costs	2011/12-2012/13	2013/14-2014/15			
<ul> <li>including relevant retail environmental schemes</li> </ul>	Final determination reports from jurisdictional regulators.	CPI			
Retail margin	2011/12-2012/13	2013/14-2014/15			
	Final determination reports from jurisdictional regulators.	In accordance with the margin applied in the last jurisdictional retail price determination.			
	This was not separately identified for Victoria.	This was not separately identified for Victoria			

### 4.2 Western Australia

### Data sources and general approach to modelling

Network costs in the SWIS are determined by the ERA in consultation with the incumbent transmission and distribution network service provider, Western Power. In relation to the regulation of retail prices, the ERA's role is in advising the Government of the efficient costs and electricity prices of the incumbent retailer, Synergy. The final residential retail price is set by the Western Australian Government.

### Figure 4.2 Western Australia - Summary of data sources and approach

Western Australia					
Data type	Source	Methodology for projected adjustments			
Transmission and distribution network costs - including any metering and feed-in tariff costs	2011/12-2012/13 Information provided by the Public Utilities Office	2013/14-2014/15 Adjustment factors derived from Economic Regulation Authority, Western Power's proposed revised access arrangement for the Western Power network, Final decision, 5 September 2012.			
Wholesale energy costs - including carbon price	2011/12-2012/13 Information provided by the Public Utilities Office	2013/14-2014/15 Values derived from Economic Regulation Authority, Synergy's Costs and Electricity Tariffs, Final report, 4 July 2012			
Retail costs - including any retail environmental scheme costs	2011/12-2012/13 Information provided by the Public Utilities Office	2013/14-2014/15 CPI			
Retail margin	2011/12-2012/13 Economic Regulation Authority, Synergy's Costs and Electricity Tariffs, Final report, 4 July 2012	2013/14-2014/15 3.5% applied over total costs (from the ERA's Final report)			

### 4.3 Northern Territory

### Data sources and basic approach to modelling

Similarly, in the Northern Territory, network costs are determined by the Utilities Commission, with the final residential retail price being set by the Northern Territory Government.

### Figure 4.3 Northern Territory - Summary of data sources and approach

No	Northern Territory					
Da	ta type	Source	Methodology for projected adjustments			
Tra dis -	nsmission and tribution network costs these costs are combined including any metering and feed-in tariff costs	2011/12-2013/14 Information provided by Northern Territory Treasury	2013/14-2014/15 CPI			
w	olesale energy costs	2011/12-2013/14	2012/13-2013/14			
	including carbon price	Information provided by Northern Territory Treasury	Proportion of 30 per cent retail price increase added 2013/14-2014/15 CPI			
Re	tail costs	2011/12-2013/14	2012/13-2013/14			
	including any retail environmental scheme costs and retail margin	Information provided by Northern Territory Treasury	Proportion of 30 per cent retail price increase added 2013/14-2014/15 CPI			

## 4.4 Estimating wholesale energy costs

There is currently no uniform methodology that is applied by all jurisdictional regulators in setting the wholesale energy allowance. Each regulator has developed its own methodology and assumptions over time. These differences may reflect variations that exist in terms of jurisdictional energy profiles and consumption behaviours, supporting infrastructure, technology levels and associated investment and, importantly, the underpinning policy and regulatory environments.

In relation to electricity retail prices, the estimation of wholesale energy costs is an important matter to consider since, aside from network costs, this component currently has the largest impact on the final retail price. Because of the variations in the approaches taken to estimate this cost, it is not possible to replicate, or accurately predict the modelling output.

How this component is determined is also important for retailers, both regulated and non-regulated, since this will also impact on revenue and competitive activity in the retail market. In a recent discussion paper,<sup>261</sup> ESCOSA states that:

"If estimates are too high, standing contract customers will pay too much, although those who have signed market contracts may receive prices more in line more with efficient costs, to the extent that retailers compete with each other. If the forecasts are too low, standing contract customers may receive short-term benefits although, in the long-run, retailers may not compete robustly and the benefits of competition (innovation, low-cost offerings) may disappear, again, leaving the customers paying more than they should."

In the NEM, this component is market driven in that the cost of purchasing wholesale energy is not in itself regulated by any regulator but set through the interaction of demand and supply. In Western Australia and the Northern Territory this cost is reached via bilateral agreement between the generators and the retailers or large users. As the final retail price is set by the government in these jurisdictions, it is not possible to determine how this allowance is calculated.

In jurisdictions that have retained retail price regulation, a necessary part of the price determination process is to estimate what these costs will be over the determination period. Usually this will entail modelling of these costs using available historical information and data, and a number of assumptions about the future. This is a complex process and regulators will often have these cost estimations modelled by consultants that have models specifically designed for this purpose.<sup>262</sup>

Common approaches adopted by regulators have historically been based on a LRMC approach or, alternatively, a market based cost approach:

• A stand-alone (or greenfield) LRMC approach is a theoretical approach that considers the least cost generation to meet the existing regulated load. Cost estimates are based on the long-run costs, that is the fixed and

<sup>&</sup>lt;sup>261</sup> Essential Services Commission of South Australia, *Electricity standing contract - wholesale cost investigation*, discussion paper, 20 June 2012, at page 1.

<sup>&</sup>lt;sup>262</sup> Each consultant will also have its own model which is based on its own assumptions.

variable/operational costs, that a new entrant generator faces, and will seek to recover, when entering the market; and

• A market based cost, or energy purchase cost, approach, is an estimate of the cost to the retailer of purchasing electricity from the wholesale market to cover its supply requirements over the retail regulatory period. Cost estimates are therefore based purely on the short run costs to the retailer of acquiring electricity from the wholesale market for the period in question.

The specific approach chosen will have an impact on the output of the modelling that is undertaken.

It is not the intention that the modelling in this report should exactly replicate the approach taken by a regulator, since the focus is to identify the drivers of future trends rather than predict prices. It would also not be practical to try and replicate the approach taken in each jurisdiction since, despite the identification of methodologies above, regulators may choose one of several variants or an average of the different approaches.

With the exception of South Australia and Victoria, estimations of the wholesale energy component in this report have been based on the 2011/12 jurisdictionally determined value as the starting point and applying a trend derived either from Frontier's modelling or CPI. In Victoria, the 2011/12 value determined in the AEMC's *Possible future retail electricity price movements: 1 July 2011 to 30 June 2014* review<sup>263</sup> was taken as the starting point.

Where the trend has been derived from Frontier's modelling, it is the trend best reflecting the methodology used in that jurisdiction, that is applied. The application of a trend in this manner mitigates any one-off step changes in modelled costs caused by a change in the model used. Where estimation in this manner is not possible, for example where the methodology is difficult to replicate utilising Frontier's modelling results, such as in Queensland, then an annual adjustment for CPI is made.

In South Australia the actual cost estimates from Frontier's modelling were used rather than a derived trend. This reflects the decision by the South Australian regulator to move from the determination of the wholesale energy costs using a LRMC approach to a market based approach.

Wholesale energy cost estimations have also been based on specific scenarios which have been developed by AEMO for the 2012 Electricity Statement of Opportunities.<sup>264</sup> In particular, Scenario 3 - Planning case, has been adopted as the base case for this report. Modelling will also be influenced by the assumptions established under this scenario.<sup>265</sup>

Figure 4.4 and Figure 4.5 provide a summary of the range of approaches that are currently adopted by jurisdictional regulators.

<sup>&</sup>lt;sup>263</sup> The final report of this review, which was published in December 2012, is available from the AEMC website www.aemc.gov.au.

<sup>&</sup>lt;sup>264</sup> This is available from www.aemo.com.au.

<sup>&</sup>lt;sup>265</sup> Further explanation of these scenarios is provided in Appendix C.

## 4.5 Estimating the impact of the carbon price

The Commonwealth Clean Energy Legislation commenced on 1 July 2012. This included the introduction of a carbon price starting at \$23/t CO2 -e, which is legislated to rise by 2.5 per cent each year thereafter until 1 July 2015, when the price will become fully flexible under an emissions trading scheme.

Following the commencement date of this scheme, wholesale energy costs are inclusive of the cost of carbon. Similarly the modelling of wholesale energy costs after this date will be inclusive of the impact of the carbon price. This also means that the differences in approaches taken to estimate wholesale energy costs will influence the impact of the carbon price that is reflected.

Where a standalone LRMC approach is used to estimate the wholesale energy component, the carbon price impact is expected to be lower compared to a market based approach. This is because this approach assumes that there is no existing generation plant so investment can respond immediately to the introduction of a carbon price. In contrast, under a market based approach, the modelling takes into account all existing generation plant, which means that investment responds to the introduction of a carbon price only over time.

This difference means that there are very different generation mixes, and very different emissions intensities, taken into account under each approach, which can lead to a divergence in the impact of the carbon price.

In this report, in order to mitigate unnecessary step changes in costs caused by changes in modelling approaches, trends derived from Frontier's wholesale energy cost modelling were applied where this was possible. Where this was not possible, for example in South Australia, the actual costs modelled by Frontier were used. This is discussed in more detail in section 4.4.

## Figure 4.4 Jurisdictional approaches to retail price determinations in the NEM

Queensland Que Con Aut	ueensland ompetition uthority (QCA)	Prior to 2012/13 Benchmark retail cost index (BRCI) applied across all regulated prices (all regulated prices adjusted by the same percentage). 2012/13 All regulated tariffs (except for tariff 11) adjustments based on a	Wholesale energy costs - energy costs - market fees and charges - energy losses - impact of the carbon price - other scheme costs Retail costs - point costs	Prior to 2011/12 50% LRMC 50% MC approaches applied. 2011/12 MC approach applied to all regulated tariffs except for tariff 11.	Annual process: the new delegation to undertake price regulation is for three years, but each year will be determined individually. Delegations require QCA to consider (amongst othe things): the Queensland uniform tariff policy and a
		building blocks approach. Tariff 11 set at 2011/12 rates (except for the carbon price) for 2012/13 by the Queensland Government. Assessment is based on an efficient, stand-alone, incumbent retailer supplying to customers across the NEM on either regulated or market contracts.	<ul> <li>- customer acquisition and retention costs</li> <li>- retail margin</li> <li>Network costs, based on Energex's approved costs, and are passed through.</li> </ul>	2013/14 Approach to be finalised.	three year transitional arrangement to rebalance th components oftariff 11 (and others) and to bring it into cost reflectivity by 1 July 2015. The QCA has released an interim consultation paper and an interim consultation paper on transitional issues. The final determination will be published on 31 May 2013.
New South Wales Ind Pric Reg Trib (IP4	ndependent ricing and egulatory ribunal PART)	Weighted average price cap approach. Assessment is based on an efficient, stand-alone, incumbent retailer supplying to customers across the NEM on either regulated ormarket contracts.	Wholesale energy costs - energy costs - market fees and charges - energy losses - impact of the carbon price - other scheme costs Retail costs - operating costs - customer acquisition and retention costs - retail margin Approved network costs are passed through.	Prior to 2012/13 Higher of the LRMC or MC approaches was applied 2013/14-2015/16 New terms of reference specify that wholesale energy purchase cost allowance is to be no lower than a weighted average of 75% LRMC and 25% MC approaches. Final methodology to be determined.	Three yearly process, with annual price resets in accordance with the determination. Resets allow a review of wholesale energy cost allowances and cost pass throughs, and any other matter identified in the determination. Current regulatory control period runs from 1 July 2010 through until 30 June 2013. New terms of reference for the period 1 July 2013 the 30 June 2016 have been received. IPART has commenced consultation on the methodology and a final report due by May 2013.

### Figure 4.5 Jurisdictional approaches to retail price determinations in the NEM (continued)

NEM Jurisdiction	Regulator	Approach to retail price determination	Retail cost items considered	Approach to estimating wholesale electricity costs	Determination process details
Australian Capital Territory	Independent Competition and Regulatory Authority (ICRC)	Building blocks approach. Assessment is based on the efficient costs of an incumbent electricity retailer supplying the regulated customer market.	Wholesale energy costs - energy costs - energy contracting costs - market fees and charges - energy losses - impact of the carbon price - other scheme costs Retail costs - operating costs - operating costs - other jurisdictional scheme costs - retail margin Approved network costs are passed through.	MC based approach based on the costs of purchasing electricity futures contracts applied.	Two yearly process, with an annual adjustment based on a weighted average price cap determined by the ICRC. Current regulatory control period runs from 1 July 2012 through until 30 June 2014. Current terms of reference allow for an additional more extensive review by 30 June 2013 "where appropriate."
South Australia	Essential Services Commission of South Australia (ESCOSA)	Prior to 31 January 2013, Relative Price Movement (RPM) methodology applied which involves setting a cost reflective price at the start of the regulatory control period. Annual adjustments made in line with movements in market contract prices, subject to a tolerance band. Retail price regulation removed from 1 February 2013.	Wholesale energy costs - energy costs - market fees and charges - energy losses - impact of the carbon price - other scheme costs Retail costs - operating costs - oustomer acquisition and retention costs - other jurisdictional scheme costs - retail margin Approved network costs are passed through.	Prior to 2010         MC approach applied based assessment of forward wholesale electricity contracts.         2011-2013/14         LRMC approach applied due to the perceived lack of liquidity in the wholesale market raising doubts as to the reliability of contract prices at the time.         2012         Draft determination on approach to estimating wholesale energy cost released, reverting to a MC approach from 1 January 2013 for remainder of determination. Final determination due December 2012.         Retail price regulation removed from 1 February 2013.	Regulatory control period was to run for three and a half years - 1 January 2011 to 30 June 2014 - to introduce greater alignment with the timing of distribution tariff adjustments by the AER. Retail price regulation removed from 1 February 2013.
Tasmania	Office of the Tasmanian Economic Regulator (OTTER)	Building blocks approach. Assessment is based on the maximum prices by reference to a notional maximum revenue that may be earned from non- contestable customers.	Wholesale energy costs - energy costs - energy losses - impact of the carbon price Retail costs - cost to serve - retail margin Poss through costs - other scheme costs - market fees and charges - approved network costs	<ul> <li>Prior to May 2012 LRMC approach applied.</li> <li>The regulator's approach is constrained by the provisions of the Tasmanian Price Control Regulations. On 16 May 2012 the Tasmanian Government amended these regulations to require the regulator to calculate the wholesale energy costs as the average of: <ul> <li>the LRMC of generation by a notional generator supply to non-contestable customers on mainland Tasmania, and</li> <li>the price Aurora Energy would pay to purchase energy in Victoria and transport electricity for the same supply.</li> </ul> </li> </ul>	Three yearly process. The determination sets maximum retail prices for non-contestable customers for the period. Aurora Energy is required to submit retail pricing proposals for approval by OTTER. Annual adjustments must not exceed the notional maximum revenue that was set in the determination. Current regulatory control period runs from 1 July 2010 to 30 June 2013.
Sources:	NEM jurisdictional	pricing determinations			
Notes:	LRMC	Refers to the greenfields or standa	alone long run marginal cost approach	MC Refers to a market cost based approach	

## 4.6 Cost pass-throughs

A cost pass-through can occur at various points of the electricity supply chain and represents a cost to the service provider, be that a transmission business, distribution business or retailer, that is a permitted cost that can be added to other approved costs by the regulator which are not subject to the full regulatory determination. Such costs differ from the costs that form part of a business' underlying costs, in that they are costs over which the business has little or no control, and are therefore allowed to be passed-through.

Examples of costs that are passed-through in this manner are network costs (referred to as network use of system (NUOS) costs on the final retail bill). These costs are comprised of transmission use of system (TUOS) costs and distribution use of system (DUOS) costs, and are the costs of transporting electricity to the end user. Typically, costs are passed through to the distribution network business, which adds them to its own DUOS costs. The combined NUOS costs are then treated as pass-through costs by retailers/ regulators since retailers cannot avoid or control these costs.

At each point of service, the provider has a degree of discretion as to how it structures these charges. As they are passed-through, the next service provider also has this discretion in incorporating these costs into its own charging structure, or simply passing them through to the next point. For clarity, and as an example, a transmission network business will set its own TUOS price structure, but once this is passed through to the distribution network business, the distribution network business can retain the price structure as it was passed through, or may incorporate it into its own price structure.

These costs are ultimately passed-through to the retailer for invoicing and collection, which similarly has a discretion on how it will recover these costs.

The decision on how these costs might be recovered, that is how they are structured into the final price, may be dependent on a number of factors. These might include the level of risk a business is willing to take in cost recovery, changes in external circumstances, such as changing levels of demand or technical difficulties requiring a change, such as the inability to pass on time-of-use pricing to accumulation meters.

The term 'cost pass-through' is also used to refer to unforeseen costs incurred by networks or retailers. Even under regulated pricing regimes, in most jurisdictions, networks and retailers (that are obliged to make regulated offers) can still apply for these prices to be varied over the term of a regulatory price control period, for the purpose of passing through unexpected costs from one or more of the various components.

Usually this will require the applicant to show the regulator that the particular cost is classified as a pass-through event,  $^{266}$  and that it meets an appropriate financial

<sup>&</sup>lt;sup>266</sup> These are usually defined events, and the applicant must be able to show that the event being claimed falls within a specified category. An example is an unexpected cost incurred due to a regulatory change.

threshold.<sup>267</sup> The regulator then determines the efficient costs associated with the event that may be recovered. Cost adjustments associated with the occurrence of natural disasters, the implementation of the feed-in tariff schemes and the SRES are examples of this type of cost pass-through.

## 4.7 Differences from last year's report

There are a number of differences between this year's report and last year's report:

- *Treatment of wholesale energy costs*: last year the modelled jurisdictional wholesale energy costs were included without modification to the cost build-up. This year, for those jurisdictions where this is possible, the *trends* identified in the modelled costs will be applied to the actual cost data derived from jurisdictional regulators. This will address one-off step changes occurring as a result of differences in methods adopted by the jurisdictional regulators, and the method and assumptions used in Frontier's modelling. In some jurisdictions however this approach could not be applied, for instance where the regulator has or is proposing to change the approach used to model these costs. In these circumstances we have simply applied Frontier's modelled results.<sup>268</sup>
- *Treatment of carbon costs*: last year, prior to the introduction of the carbon tax, two sets of results were produced: one including and one excluding the estimated impact of a price on carbon. Since the commencement of the Clean Energy legislation from 1 July 2012, modelling of the wholesale energy component automatically includes the impact of the carbon price. Therefore, the approach taken in modelling the wholesale energy component will directly influence the magnitude of the carbon impact.<sup>269</sup>
- *Treatment of environmental scheme costs*: last year these costs were grouped together as a component, separate from the other components. This year these costs have been combined within the cost component in which they would generally fall. For example, the costs associated with feed-in tariff schemes are incurred by the distribution networks, and therefore have been included within the distribution network component. This is to be able to present a clearer picture of the overall impact of a particular component, inclusive of the impact of any environmental scheme.

This year the wholesale energy cost modelling was also based on scenarios developed by AEMO for the 2012 Electricity Statement of Opportunities.<sup>270</sup> Scenario 3 - Planning case has been adopted as the base case for this report. This scenario is not characterised by AEMO as a pure 'business as usual' scenario but as a "best estimate of the future of the energy industry."<sup>271</sup>

<sup>&</sup>lt;sup>267</sup> For example, that the cost is equal to one per cent of revenue.

<sup>&</sup>lt;sup>268</sup> This is discussed in more detail in section 4.4.

<sup>&</sup>lt;sup>269</sup> This point is discussed in more detail in sections 4.4 and 4.5.

<sup>270</sup> This is available from www.aemo.com.au.

<sup>&</sup>lt;sup>271</sup> Australian Energy Market Operator, 2012 Scenarios descriptions, 23 January 2012, at page 13.

Importantly, this scenario incorporates assumptions about the carbon price based on the Treasury core scenario corresponding to a five per cent reduction on 2000 emissions by 2020. This assumes a nominal domestic carbon price in 2015 of \$25.39/t CO2-e,<sup>272</sup> and a nominal international price in 2015/16 of \$29/tCO2-e.<sup>273</sup> Modelling of carbon costs in this report will therefore reflect these assumptions.

For comparison purposes, additional modelling was undertaken based on the AEMO Scenario 5 - Slow rate of change case. The results of this modelling have been included in the appendices. These results are in addition to the terms of reference and are provided for information only.<sup>274</sup>

Ibid at page 22.

<sup>&</sup>lt;sup>273</sup> Treasury, *Strong growth, low pollution - modelling a carbon price*, Appendix B - Treasury climate change mitigation modelling - assumptions.

<sup>&</sup>lt;sup>274</sup> These results are included in Appendix B.

## Abbreviations

AEMC	Australian Energy Market Commission
AEMO	Australian Energy Market Operator
AER	Australian Energy Regulator
AMI	advanced metering infrastructure
APP	administered price period
ASX	Australian Securities Exchange
BRCI	Benchmark Retail Cost Index
BREE	Commonwealth Bureau of Resource and Energy Economics
c/kWh	cents per kilowatt-hour
CCGT	combined cycle gas turbine
CO2	carbon dioxide
СРІ	Consumer Price Index
СРТ	cumulative price threshold
CSO	community service obligation
DUOS	distribution use of system
ERA	Economic Regulation Authority
Ergon	Ergon Energy
ESCOSA	Essential Services Commission of South Australia
ESOO	Electricity Statement of Opportunities
Frontier	Frontier Economics
GJ	gigajoule
GST	Goods and Services Tax
GWh	gigawatt-hours
LRET	Large scale Renewable Energy Target
LRMC	long run marginal cost
MCE	Ministerial Council for Energy
MPC	market price cap
MW	megawatts
MWEP	Western Australian Mid-West Energy Project

MWh	megawatt-hours
NEL	National Electricity Law
NEM	National Electricity Market
NEO	National Electricity Objective
NER	National Electricity Rules
NSW	New South Wales
NTNDP	National Transmission Network Development Plan
NTUC	Northern Territory Utilities Commission
NUOS	network use of system
NWIS	North Western interconnected System
OCGT	open cycle gas turbine
OTTER	Office of the Tasmanian Energy Regulator
PWC	Power and Water Corporation
QCA	Queensland Competition Authority
RBA	Reserve Bank of Australia
RET	enhanced Renewable Energy Target
RRP	Regional Reference Price
SCER	Standing Council on Energy and Resources
SRES	Small scale Renewable Energy Scheme
STEM	Short Term Energy Market
SWIS	Western Australian South Western
t СО2 –е	tonne of carbon dioxide equivalent
TEC	Western Australian Tariff Equalisation Contribution
Tribunal	Australian Competition Tribunal
TUOS	transmission use of system
TWh	terrawatt-hours
WEM	wholesale electricity market

## A Summary of Australian electricity markets in Australia

## A.1 National electricity market

## A.1.1 Governance structures and objectives

The National Electricity Market (NEM) is the interconnected power system that services the eastern seaboard states and territories of New South Wales, Victoria, Queensland, South Australia, Tasmania and the Australian Capital Territory.<sup>275</sup> Western Australia and Northern Territory are not participants in this electricity market system and their individual systems are described separately below.

The overarching legal framework of the NEM, the National Electricity Law (NEL), sets out the responsibilities of the various NEM institutions as well as a National Electricity Objective (NEO). It also sets out the responsibility of the Standing Council on Energy and Resources (SCER), which in turn reports to the Council of Australian Governments.

The governments of the individual NEM jurisdictions have different levels of involvement in electricity service provision within their jurisdictions, including, in some cases, oversight of the setting of retail price regulation and network reliability standards.

Beneath this high level governance structure, the main regulatory institutions are:

- The Australian Energy Market Commission (AEMC) is the market institution responsible for developing changes to the National Electricity Rules (NER), which is the general statutory framework under the NEL which describes NEM functions. The AEMC is also responsible for market development and provides policy advice to the SCER;<sup>276</sup>
- The Australian Energy Regulator (AER) is responsible for the economic regulation of the non-competitive sectors of the NEM, including electricity distribution and transmission networks as well as some gas networks. The AER is also responsible for the enforcement of compliance with the NER; and
- The Australian Energy Market Operator (AEMO) operates the power system as well as the retail and wholesale gas markets of south eastern Australia. AEMO is also responsible for long term planning of the interconnected power system, including forecasting demand and supply scenarios and network development. AEMO is also responsible for implementing changes to the rules made by the AEMC.

All of the NEM market regulatory bodies are guided by the NEO, which is the main statutory objective and is set out in section 7 of the NEL. It is important to note that the NEO refers to issues of economic efficiency: environmental and social issues are addressed in other legislation and specific government policies.

<sup>&</sup>lt;sup>275</sup> Note that while six jurisdictions participate in the NEM, there are only five NEM regions, as the Australian Capital Territory is included in the New South Wales NEM region.

<sup>&</sup>lt;sup>276</sup> The AEMC is not empowered to itself make changes to the Rules, other than for administrative purposes or to make a non-material change. Rule changes may be proposed to the Commission by any individual, including market participants, the SCER or by any member of the public.

## A.1.2 The physical NEM

A primary physical characteristic which has shaped the NEM is the narrow but dispersed distribution of load and generation centres along the east coast of Australia. The NEM spans a geographic area over 5,000kms in length, from Port Douglas in north Queensland, to Port Lincoln in South Australia and Hobart in Tasmania.<sup>277</sup> The majority of load is concentrated in a relatively narrow band within 100km or so of the coast. Across this geographic spread there are markedly different climatic and environmental characteristics, driving very different energy consumption patterns across the system.

To serve such a widely distributed load, the NEM incorporates over 750,000 kms of distribution and 40,000kms of transmission infrastructure. As a comparison, in the United Kingdom there are around 800,000 kms of distribution and 25,000 kilometres of transmission infrastructure serving a population which is more than three times that served by the NEM.<sup>278</sup>

In 2010 - 2011, the NEM supplied over 204 terrawatt-hours (TWh) of energy to around nine million customers. This energy was supplied by 305 generators, with a total installed capacity of 49110 MW. Around 78 per cent of the energy consumed in the NEM is produced by coal fired generation, 12 per cent by gas fired generation and eight per cent by hydro-electricity. Wind generation is the primary non-hydro renewable and currently provides around 2.7 per cent of total energy consumed.<sup>279</sup>

The nature of the generation mix reflects the relative abundance of various fuel resources along the east coast of Australia. These resources include extensive black and brown coal deposits in South Australia, Victoria, Queensland and New South Wales; natural and coal seam gas in South Australia, Queensland, New South Wales and Victoria; and hydro resources in Tasmania, New South Wales, Victoria and Queensland. In more recent years, driven in part by the enhanced Renewable Energy Target, there has been an increase in the entry of wind generation, which has been substantial in some jurisdictions. <sup>280</sup>

Given these relative resource endowments the NEM has, to date, utilised a mix of different fuel types in proportion to their relative costs and technologies: generally, black and brown coal fired generation has been used for base-load, black coal or combined cycle gas turbine (CCGT) for mid merit, open cycle gas turbine (OCGT) gas for peaking and OCGT gas or liquid fuel for super peaking.

<sup>&</sup>lt;sup>277</sup> http://www.esaa.com.au/content/detail/australian\_electricity\_markets

<sup>278</sup> Australian Government Productivity Commission, *Electricity Network Regulation Electricity*: Issues Paper, February 2012, p.8; United Kingdom Department of Climate Change, *The Current British Electricity Network*, accessed from http://www.decc.gov.uk/en/content/cms/meeting\_energy/network/network.aspx, 12 March 2012.

<sup>&</sup>lt;sup>279</sup> Australian Energy Regulator, *State of the Energy Market 2011*, at page 25; Electricity Supply Association of Australia, *Electricity Gas Australia* 2011, at page 19.

<sup>&</sup>lt;sup>280</sup> For example, in South Australia, total installed wind generation is approximately 20 per cent of total installed capacity: see Energy Supply Association of Australia, *Electricity and Gas Australia* 2011.

## A.1.3 NEM market mechanisms

The NEM is an energy only, gross pool market, meaning that all energy is traded through a central clearing mechanism. A market clearing price is calculated for each half hour trading interval, based on the bids and offers of generators and consumers. A separate spot price is calculated in this way for each of the five regions of the NEM.

Spot prices in the NEM are capped by the application of the market price cap (MPC) of \$12,900/MWh, while a cumulative price threshold (CPT) limits total market exposure to price risk, and is currently set at a value of \$193,900.<sup>281</sup> When the sum of all spot prices in a seven day period exceeds this amount, an administered price period (APP) is triggered. During an APP, market prices are collared between two administered prices until the cumulative price has again dropped below the threshold limit.

This arrangement is in contrast with the situation in some other international jurisdictions, where energy spot prices are uncapped. Under such market arrangements, allowing the market to always determine a final clearing price means that the scarcity value of electricity is always reflected in the market price. This high price also ensures that the marginal market generator is able to recover both its variable and fixed costs when dispatched.

To ensure that adequate financial incentives remain for continued maintenance of existing plant or the building of new generation facilities, the reliability panel of the AEMC sets the level of the MPC and the CPT. They are set such that the market price and cumulative price are capable of reaching levels which are sufficiently high to ensure that the most marginal generator earns revenue sufficient to cover its fixed and variable costs. The level at which the MPC and CPT are set therefore strikes a balance between sending efficient investment signals and mitigating the overall price risk faced by market participants.

Because of the characteristics of non-storability of generation and the tendency of consumers towards continuous consumption, generator output is required to match demand in real time, i.e., instantaneously. For any given pattern of demand over time, there will be an associated optimal mix of generation, made up of:

- Baseload generation: the portion of demand that is relatively constant over time is most efficiently served by baseload generators. To date in Australia, this has been predominately coal-fired generation. Baseload technologies are characterised by high initial capital costs, long lead times for construction and relatively low operational costs. This means that they can be run continuously at a relatively low cost. However, because their output cannot easily be cycled up and down quickly, baseload generators are not very responsive to rapid changes in demand;
- Mid-merit generation: the proportion of demand which is more variable but is reasonably predictable, for example the periods of higher demand on weekday mornings and evenings, is most efficiently served by mid-merit plant such as CCGT plant. Such plant generally has lower capital costs but higher operational costs, than baseload generators; and

<sup>&</sup>lt;sup>281</sup> These values are adjusted annually in line with the CPI.

• Peaking generation: the final proportion of demand that is highly uncertain, for example the peak hours during the hottest summer day, is most efficiently served by peaking plant such as OCGT plant. These plant have low capital costs but high operating costs because of their relative technical inefficiency.

The different cost structures of the different plant play some part in their respective bidding strategies. In order to sell their energy into the wholesale market, generators submit offers to AEMO, the market operator. In addition to certain operational parameters, these offers detail the volume the generators are willing to generate at each of up to ten different prices. AEMO uses the offers to determine the most cost-effective way to meet the prevailing demand and frequency control requirements. Offers to generate are stacked in a "merit" order of rising price, and this merit order is then used by AEMO to dispatch generators, least cost first.

The point on the merit order at which demand is satisfied determines a single price for electricity in each region of the NEM: the Regional Reference Price (RRP). Generators within a region receive the RRP, adjusted to reflect losses on the transmission network, for the volume of generation for which they are dispatched.

## A.1.4 Wholesale prices in the NEM

Spot prices tend to follow a typical pattern throughout each trading day: that is, they tend to be above the average price during periods of higher demand from mid-morning through to the early evening before dropping away during the later evening and into the early morning. This is generally true in all jurisdictions. These fluctuations reflect the common peak and off-peak demand patterns. While spot prices tend to follow an average pattern throughout most days of the year, at certain times they may also exhibit significant volatility reflecting, for example, seasonal/temperature fluctuations.

The capital intensive nature of generation businesses means that it is not feasible to base the revenue streams of such businesses around volatile spot market prices. Equally, retailers may be exposed to significantly high pool prices from time to time, which they must cover in order to supply their customers. Accordingly, participants have developed a number of mechanisms to manage their exposure to this volatility, such as:

- the trading of hedging arrangements via a secondary market, which helps parties to address the volatility of prices that can occur in the gross pool. This contracting helps to provide a degree of cost and revenue certainty for both producers and consumers of electricity; and
- vertical integration between retail and generation businesses, an increasingly common arrangement in the NEM which allows a participant to develop a physical hedge against spot price fluctuations.

These mechanisms described above help participants to manage the price uncertainties inherent to electricity trading. In helping to manage these uncertainties, hedging arrangements also underpin the viability of investment in the NEM. The types of hedging arrangements that are traded reflect assessments of wholesale market outcomes, which in turn influence the type of generation investment favoured by investors.

## A.2 Western Australia

### A.2.1 Overview

Western Australia's electricity supply industry is comprised of several distinct systems, none of which are interconnected to the National Electricity Market.

The South-West Interconnected System (SWIS) is the largest interconnected electricity system in Western Australia and runs from Kalbarri in the north to Kalgoorlie in the east and Albany in the South, supplying to the more densely populated areas of the state.<sup>282</sup> The SWIS is the only system in Western Australia to support a wholesale electricity market (WEM). This was introduced into the SWIS in September 2006. This reform was designed to provide consumers with choice of competitively priced energy products and services, and to attract private investment into the market.

The transmission and distribution networks, covering approximately 96,000 km, in the SWIS are operated by Western Power, with Synergy operating as the incumbent retailer, supplying to all residential customers.

Outside of the SWIS, there are 34 small, isolated electricity systems that power remote townships, and two small interconnected systems: one in the Pilbarra, referred to as the North Western Interconnected System (NWIS), and one that connects the towns of Kununurra and Wyndham. Collectively, these are the responsibility of Horizon Power, which is a fully vertically integrated government owned entity. Horizon Power is responsible for the entire electricity supply process and its operations span generation/ procurement of electricity, transmission, distribution and retailing activities. Except for Rottnest Island,<sup>283</sup> nearly all customers outside of the SWIS are serviced by Horizon Power.

## A.2.2 Governance and market structure in the SWIS

Several key governance bodies exist in the WEM:

- Independent Market Operator (IMO): the market operator which maintains and develops the Market Rules and procedures, registers Rule Participants and operates the Short Term Energy Market (STEM) and the Reserve Capacity Mechanism;
- System Management: a ring-fenced entity within Western Power responsible for operating the power system to maintain security and reliability;
- Economic Regulatory Authority (ERA): the jurisdictional regulator, responsible for economic regulation and market monitoring; and
- Market Advisory Committee: an industry and consumer group convened by the IMO to advise on changes to Market Rules and procedures.

#### 128 Possible future retail electricity price movements: 1 July 2012 to 30 June 2015

<sup>&</sup>lt;sup>282</sup> Much of the information for this section was obtained from the Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final report, 4 June 2012, Appendix B: Background to the electricity sector in Western Australia, page 128.

<sup>283</sup> The Rottnest Island Authority is the body responsible for the end to end electricity supply process on this island.
In terms of market structure, while there are numerous registered market participants, the dominant participants in the market are:

- Verve Energy: this is the largest market generator in Western Australia. Verve Energy owns and operates four major power stations, and has interests in numerous others, including renewable energy. It has a total generation capacity of 2,967 MW.<sup>284</sup> In addition, it is required to make its capacity available to System Management to provide ancillary services and must balance the entire SWIS in real time;
- Western Power networks: this is the network owner and operator for the SWIS, responsible for operating the transmission and distribution systems. Third party access to these networks are governed by an access arrangement, which is reviewed every three years by the Economic Regulation Authority;<sup>285</sup> and
- Synergy: the incumbent retailer in the SWIS and is the only retailer allowed to serve customers that do not have an interval meter.

### A.2.3 Key WEM mechanisms

Unlike the NEM, which is an energy-only market, the WEM has two components: an energy market, which allows for the buying and selling of electricity, and a capacity market, which provides incentives for long term investment in generation capacity.

### The capacity market

The capacity market operates under the Reserved Capacity Mechanism and other instruments to ensure adequate generation capacity exists to meet expected demand in a given time period. The IMO sets the Reserve Capacity Requirement, which is the overall capacity required for each year that is sufficient to meet forecast annual peak demand even if the largest single generator was to become unavailable.

The Reserve Capacity Mechanism operates on a two year rolling cycle, providing a guarantee of payment to investors providing certified capacity, called capacity credits. The capacity payment is based on the Maximum Reserve Capacity Price, the value of which is proposed annually by the IMO and approved by the Economic Regulation Authority. In return for this payment, generators and demand management providers are required to offer their capacity into the market at all times, unless otherwise approved, for example for scheduled maintenance.

Retailers are assigned an Individual Reserve Capacity Requirement, which is based on their loads associated with peak usage. These are set annually and the total of these requirements matches the total Capacity Credits assigned annually to generators and demand side providers. Retailers are exposed to the Maximum Reserve Capacity Price if they have not purchased sufficient credits to meet their Individual Reserve Capacity Requirement.

In 2010/2011 Verve Energy was responsible for 60 per cent of the generation in the SWIS: Economic Regulation Authority, *Inquiry into the efficiency of Synergy's costs and electricity tariffs*, Final report, 4 June 2012, Appendix B: Background to the electricity sector in Western Australia, page 128.

<sup>285</sup> Ibid.

### The energy market

The majority of the electricity traded in the WEM is through bilateral contracts which are negotiated privately between generators and retailers. The IMO has no interest in these, except to the extent that Market Participants are required to submit their bilateral schedule data to the IMO each day so that the transactions can be scheduled.

These bilateral trades are complimented by the operation of the STEM, which is a daily forward market for energy that allows Market Participants to make adjustments around their contracted energy position, allowing generators to sell their excess capacity and retailers to buy additional energy, producing a net contract position. The combined net bilateral position and STEM position of a Market Participant describes its net contract position.

Balancing refers to the settlement process to address the cost of the difference between the net contract position of Market Participants and their actual supply and consumption levels, allowing for dispatch instructions issued by System Management.

These market mechanisms are designed to operate together. Most energy is traded outside the IMO administered market via bilateral contracts between Market Customers and Market Generators. These bilateral contracts can have energy and capacity components. Market Customers and Market Generators can modify their bilateral energy position through trading in the STEM. Finally, buying or selling energy via the balancing process is the last resort in the circumstances where actual energy supplied or consumed differs from that contracted in the day-ahead mechanisms. Further, System Management is required to secure ancillary services; the costs of these services are passed on to those participating in the market.

### A.2.4 Market Evolution Program

The Market Evolution Program was designed to improve aspects of the WEM. The Market Rules Evolution Plan was endorsed by Market Participants on the Market Advisory Committee. Key changes included:

- more cost reflective balancing pricing and opportunities to provide competition for balancing services;
- a greater ability to use more accurate information in the operation of the STEM;
- a more "real time" targeted reserve capacity refund system;
- more opportunities for competition in the provision of Ancillary Services; and
- a more adaptable IT system supporting the current WEM.

In April 2011, the IMO board approved the new Balancing and Load Following Ancillary Services market arrangements. These new arrangements were implemented on 1 July 2012, with transitional arrangements in place until 5 December 2012. While some residual issues remain, these changes are viewed as providing a significant structural improvement to the WEM.<sup>286</sup>

<sup>&</sup>lt;sup>286</sup> http://www.imowa.com.au/mep-overview, viewed 6 March 2013.

### A.2.5 Retail pricing in Western Australia

At present in Western Australia, all residential electricity customers in the SWIS remain on standing offer contracts and are supplied by Synergy.

Residential retail electricity prices are set by the Government and are significantly lower than the actual cost of providing these services. This is partly due to the operation of two significant price subsidy mechanisms:

- Tariff equalisation contribution (TEC): The Western Australian Government has a uniform tariff policy which ensures that small use customers outside of the SWIS pay the same electricity tariffs as those in the SWIS. As the cost of supply to customers outside the SWIS is greater, the additional costs incurred by Horizon Power in supplying electricity are funded by the Tariff Equalisation Fund, which is itself funded from an additional levy on SWIS customers the TEC. The amount of the contribution is determined by the Government on an annual basis and is included in Western Power's distribution network charge; and
- Community Service Obligation payments (CSO): These are payments made by the State Government to cover the cost of various customer service programs. In particular, due to tariffs being set below cost reflective levels, the Government makes a 'tariff adjustment payment,' via the CSO mechanism, to Synergy to cover its cost shortfall. This was introduced in 2009/10.

### A.3 Northern Territory

The structure of the electricity market in the Northern Territory is greatly influenced by its remoteness from other electricity markets and by the geographic dispersion of the population throughout the Territory.<sup>287</sup> It consists largely of three separate, regulated systems that supply the regions of Darwin/Katherine, Alice Springs and Tennant Creek, together with a large number of stand-alone systems that supply the more remote communities. Other than Darwin and Katherine, no other regions are interconnected.

Due to the small scale of the market there are issues in establishing economies of scale in the Northern Territory. The supply side is dominated by Power and Water Corporation (PWC), which is a vertically integrated government owned corporation with generation, network and retail business units.<sup>288</sup> The Northern Territory Government

<sup>287</sup> Information on the Northern Territory electricity market has been obtained from the State of the energy market 2009, Australian Energy Market Regulator, Review of full retail contestability for Northern Territory electricity customers, issues paper, August 2009, Northern Territory Utilities Commission, Power system review 2009-2010, March 2011, Northern Territory Utilities Commission, Review of electricity system planning and market operation roles and structures, final report, December 2011, Northern Territory Utilities Commission, Northern Territory submission on the draft energy white paper and Appendix A: Strategic overview of the Northern Territory's energy landscape, March 2012, Northern Territory Utilities Commission.

<sup>288</sup> Power and Water Corporation also provide the water and sewerage services in the Northern Territory.

has established ring fencing legislation to ensure that the market dominance due to this extensive vertical integration is not used in an anti-competitive manner.

It should be noted that the regulatory framework does not make any distinction between the transmission and distribution networks, with both services being bundled under the general heading of 'network services'. Both the generation and network businesses of PWC are required to provide services to all retailers on a non-discriminatory basis.<sup>289</sup> Several smaller, independent generators also generate and supply under contract to Power and Water to these regions.

There is no wholesale electricity spot market with any central coordination; instead there is a bilateral contracting system, whereby prices are established between contracting parties themselves. This means that there is no wholesale reference price and limited information available on the cost of wholesale electricity in the Territory. Responsibility for system and market operation is given to PWC in its function as the System Controller, and generators are themselves responsible for dispatching sufficient energy into the system to meet their customers' requirements.

The Northern Territory Government commenced electricity market reforms in 2000 to meet National Competition Policy commitments, introducing full retail contestability to Northern Territory customers on a progressive basis since 2000. In 2010 all customer tranches were made fully contestable. It had a single entrant in generation and retail that year, NT Power, but that company withdrew from the market in 2002.

As noted by the Northern Territory Government in its submission to the *Draft Energy White Paper*,<sup>290</sup> a range of demographic, geographic and economic factors continue to present a significant barrier to the establishment of a fully competitive market. The Northern Territory Government also acknowledged that the costs of structural reform<sup>291</sup> would significantly outweigh the potential benefits at this stage. This is because the continuing impact of the factors specified above on the costs of electricity supply did not justify the easing of current government policy, including the continuation of the uniform tariff policy for small customers.<sup>292</sup>

Since the initial activity following the opening up of the retail market, PWC has remained the sole retailer and the market has largely reverted, and continues, to operate under a monopoly structure. Network charging and generation is regulated by the Utilities Commission and retail tariffs for non-contestable customers are determined by the Northern Territory Government.

The market is currently open for other retailers to supply electricity to Northern Territory consumers. The Northern Territory Government is continuing to review market arrangements, with the Utilities Commission having completed a number of market reviews to this end. The underlying position in these reviews is for greater

<sup>&</sup>lt;sup>289</sup> Utilities Commission, 2014-19 *network price determination*, framework and approach consultation paper, June 2012.

<sup>&</sup>lt;sup>290</sup> Northern Territory submission on the *Draft Energy White Paper*, March 2012.

<sup>&</sup>lt;sup>291</sup> That is, reforming away from a vertically integrated structure to a more decentralised market structure.

<sup>&</sup>lt;sup>292</sup> However this position may change due to the recent change in government following the Territory election in August 2012.

alignment, where possible, with principles adopted in the National Electricity Market however the future direction of further market development is also dependent on the policies of the recently elected<sup>293</sup> Territory Government. It is also notable that the Northern Territory Utilities Commission recently granted retail licences to new entrants, QEnergy in 2011, and ERM Power in 2012.

<sup>293</sup> August 2012.

### **B** Network charges in New South Wales

Table B.1 below shows consumption risk for Ausgrid as it sets out the effect on the revenue from an individual customer who reduces their consumption from 7,000 kWh per year to 6,000 kWh per year.

The table sets out the dollars paid per price block, with how the price is calculated indicated in brackets.

	Distribution (7,000 kWh)	Distribution (6,000 kWh)	Transmission (7,000 kWh)	Transmission (6,000 kWh)	Network (7,000 kWh)	Network (6,000 kWh)
Standing Charge	138.70 (38c x 365)	138.70 (38c x 365)	0.00 (0c x 365)	0.00 (0c x 365)	138.70 (38c x 365)	138.70 (38c x 365)
Block 1 (1000 kWh per 91 days)	496.00 (4000 kWh x 12.4c)	496.00 (4000 kWh x 12.4c)	8.00 (4000 kWh x 0.2c)	8.00 (4000 kWh x 0.2c)	504.00 (4000 kWh x 12.6c)	504.00 (4000 kWh x 12.6c)
Block 2 (1000+ to <2000 kWh per 91 days)	83.53 (3000 kWh x 2.7844c)	55.69 (2000 kWh x 2.7844c)	366.47 (3000 kWh x 12.2156c)	244.31 (2000 kWh x 12.2156c)	450.00 (3000 kWh x 15.0c)	300.00 (2000 kWh x 15.0c)
Block 3	0.00 (0 kWh x 3.5c)	0.00 (0 kWh x 3.5c)	0.00 (0 kWh x 15.5c)	0.00 (0 kWh x 15.5c)	0.00 (0 kWh x 19.0c)	0.00 (0 kWh x 19.0c)
Total	718.23	690.39	374.47	252.31	1,092.7	942.7
Decrease in revenue		27.84		122.16		150.00

### Table B.1 Calculation of network charges in New South Wales

This table shows that a drop in consumption leads to a total fall in charges for network services to the customer of \$150. This has resulted in a decrease in revenue for Ausgrid in the current year of \$27.84. However because the transmission charge is covered by a revenue cap, \$122.16 of the \$150, unless offset by an increase in transmission from another customer in that year, would be recovered from customers in subsequent years. The remainder will never be recovered.

### C Alternate approaches to modelling wholesale energy costs

The jurisdictional summaries in chapter 3 of this report set out the AEMC's modelling of retail residential electricity price movements, based on the approaches taken in relevant jurisdictions, in accordance with the terms of reference.

As an additional exercise, the AEMC has also elected to model the wholesale energy cost component using alternative methodologies and under different scenarios, where this was appropriate. This additional modelling was undertaken by Frontier Economics (Frontier).

The original purpose of reviewing these alternative approaches was to highlight the inherent uncertainty in projecting electricity costs. In particular, it was to illustrate how the results may be affected by the assumptions made about the future. Further, the results are also dependent on whether the methodology adopted by the modeller has a short term market price, or longer term LRMC, focus.

This is in line with the intention of this report, which is not to provide a forecast of prices but rather to identify the factors that might influence those potential price trends.

The results shown in this appendix however show only a minimal difference between the different methodologies and scenarios. This is because each model was calibrated to the 2012/13 year, with each subsequent year being adjusted by the percentage difference anticipated by Frontier's modelling. The effect is therefore similar to applying an index to the prices from the base year. However this approach avoids the step increases that might otherwise result from imposing the figures obtained from different modelling than that undertaken in the jurisdictions.

For ease of reference, the graph that reflects the prices modelled in the jurisdictional summaries in chapter 3 are labelled "jurisdictional model".

### C.1 Scenarios

Each year AEMO publishes its National Transmission Network Development Plan (NTNDP). This provides an assessment of supply adequacy in the National Electricity Market over the next ten years, highlighting opportunities for generation and demand-side investment. The 2012 NTNDP is the most recent publication and provides the results of the supply-demand outlook and summarises generation capacity information and the latest demand projections.

In preparation for the 2012 NTNDP, AEMO published a number of scenarios.<sup>294</sup> Frontier was instructed to model the relevant costs on the basis of two scenarios derived from AEMO's *National Electricity Forecasting Report for the National Electricity Market* 2012. Only two scenarios were selected from a possible six based on completeness of the models:<sup>295</sup>

AEMO, 2012 Scenario descriptions, 4 July 2012.

<sup>&</sup>lt;sup>295</sup> At the time of the writing of this report, only these scenarios had complete sets of fuel and capital costs available. The description of these models, and the others developed by AEMO, are found chapter 2 of AEMO's report.

- *AEMO planning scenario*: this model is based on AEMO's best estimate of the future direction of major drivers, designed as a central growth scenario, including predicted economic growth levels, a CO2 emissions reduction target of five per cent by 2020 and 80 per cent by 2050 and a moderate rate of new technology development. This model includes the currently legislated carbon policies based on the Treasury core scenario.
- *AEMO slow rate of change scenario*: this model postulates lower economic growth, a CO2 emissions reduction target of zero per cent by 2020 and 80 per cent by 2050, and the slow development of new technologies. This model also includes the currently legislated carbon policies based on the Treasury core scenario for the first three years and a \$0/t CO2-e after that.

The main features of these scenarios are set out in Table C.1.

Aspect	Scenario driver	AEMO Planning scenario	AEMO Slow rate of change scenario
Economic	Economic growth	Predicted	Lower
	Commodity prices	Medium	Low
	Productivity growth	Medium	Low
	Population growth	Medium	Low
Greenhouse	Reduction Target (below 2000 levels)	5 per cent reduction by 2020	Zero reduction by 2020
		80 per cent reduction by 2050	80 per cent reduction by 2050
	Carbon Price Assumption	Treasury core scenario	Treasury core scenario for first 3 years, then \$0/tCO2e onwards
	Renewable Energy Target	Remains	Remains
	GreenPower	Flat	Flat
Fuel	International coal prices	Medium	Low
	East Coast gas prices	ТВА	ТВА
	LNG East Coast Production	Medium	Low
Technology	R&D support	Moderate	Moderate
	Distributed generation penetration	Moderate	Weak

#### Table C.1 AEMO scenario descriptions

Aspect	Scenario driver	AEMO Planning scenario	AEMO Slow rate of change scenario
	Penetration of Electric Vehicles	Moderate	Weak

### C.2 Methodology

The approaches used in most jurisdictions in Australia to estimate future wholesale costs broadly fall into two categories. They are to:

- reflect the long term fundamental costs of generation, usually by applying some calculation of LRMC; or
- forecast the wholesale market prices. This can be through forecasting or utilising spot prices or futures contracts or a combination of both. This is usually undertaken by consultants utilising sophisticated market models.

### Box C.1: Long run marginal cost

The LRMC is the total cost of supplying electricity to meet the last increment in residential load. It reflects both:

- the fixed cost of generation plant (that is, the capital or investment costs), and
- the variable cost of running the plant (such as fuel costs).

In the longer term, the wholesale cost of electricity would be expected to reflect the LRMC of new generators. This is because a generator seeking to enter the market would only do so in the expectation that they will at least recover the cost of their upfront investment, ongoing costs and financing costs. Therefore if prices were sustained:

- below the LRMC, this would deter the construction of new generators and the removal from service of existing generators, which would reduce supply and put upward pressure on market prices; or
- above the LRMC, this would make it profitable to construct new generation plant. Generators would increase capacity or new generators would enter the market and would thus increase supply and put downward pressure on prices.

### Box C.2: Market based energy purchase costs

The market based approach reflects the modelled interaction of demand and supply in the wholesale market.

Currently there are a number of factors that are affecting both demand and

supply, which means that wholesale prices are currently significantly below the long run marginal cost of wholesale electricity.

The factors that affect supply and demand are discussed in chapter 2.

### C.3 Differences between LRMC and market modelling

Because the LRMC is focussed on the long term cost of additional generation, it tends to be more stable over time. This does not mean that it is completely stable as it still reflects input costs such as fuel costs, which are expected to vary.

Conversely the nature of market modelling, and its emphasis on demand and supply, means that even where concepts of hedging are utilised, the results of market modelling are more volatile over time than a LRMC approach.

As a result of the nature of these two approaches it would be expected that there are periods when the market modelling produces results that are either higher or lower than the LRMC. But what we would also expect is that over longer periods of time, the two approaches should converge.

Frontier's modelling shows that currently, and up until at least 2014/15, the market based approach results in market costs lower than LRMC. In a properly functioning market this would not be expected to continue indefinitely and generators or consumers would be expected to adjust their behaviour by, for example, mothballing plant, which in turn would lead to an increase in prices.<sup>296</sup> However, as discussed above, this is less obvious where a trend derived from Frontier's modelling has been used.

### C.4 Frontier's approach to LRMC and market costs

Each AEMO scenario has been modelled using two alternative approaches, depending on an assessment, by Frontier, of applicability of each approach for each jurisdiction:<sup>297</sup>

- *Stand-alone LRMC approach:* this is the method used in some jurisdictions to set cost reflective prices in their respective regulated retail electricity pricing determinations (where relevant). This approach ignores existing generation (and therefore the costs faced by existing generators), and postulates the least cost generation mix that would be built (from scratch), to meet the current regulated load, given the current level of technology and new entrant costs. The modelling of LRMC in this case should generally either follow the LRMC of the regulated load shape, or otherwise be calculated from an efficient cost perspective without regard to market dynamics; and
- *Market simulation approach*: this simulates the operation of the wholesale energy market prices, and requires a view about the purchasing decisions that would be made by a prudent theoretical operator operating in the market. The central

<sup>&</sup>lt;sup>296</sup> This is consistent with modelling results from NERA on the AEMC's *Potential Generator Market Power* rule change consideration at www.aemc.gov.au.

<sup>&</sup>lt;sup>297</sup> Note that not all jurisdictions had both models applied.

<sup>138</sup> Possible future retail electricity price movements: 1 July 2012 to 30 June 2015

hedging strategy assumed is that the operator will try and purchase contract cover over a period of time to ensure that it matches its load as closely as possible so that it is not exposed to the spot market during peak periods, and not over contracted during off-peak periods. This approach has regard to such matters as the strategic bidding behaviour of market participants, an assessment of additional hedging risk management costs for retailers, wholesale contracting of the regulated retail load (where relevant), actual supply and demand conditions, and likely generation dispatch mix and resulting regional reference price.

The results for individual jurisdictions are presented below.

### C.5 Queensland

In section 3.2, modelling of the wholesale energy component was based on CPI adjustments. Frontier also modelled this component for Queensland using the market based approach.

Figure C.1 compares the results for Queensland under the different scenarios, using the trends derived from Frontier's modelling.

## Figure C.1 Queensland - residential electricity prices from 2011/12 to 2014/15, summary of results from alternative scenario modelling (Frontier trend)



Figure C.2 Queensland - residential electricity prices from 2011/12 to 2014/15, market cost based approach, AEMO planning case (Frontier trend)



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.





Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

### C.6 New South Wales

In section 3.3, the wholesale electricity component in 2013/14 for New South Wales was modelled as the weighted average of the LRMC and a market based approach. This approach reflects the approach that has been taken by the New South Wales regulator until recently.

Frontier modelled the wholesale electricity component using both the LRMC and the market based approaches. Figure C.4 compares the results for New South Wales under the different scenarios, using the trends derived from Frontier's modelling.

# Figure C.4 New South Wales - residential electricity prices from 2011/12 to 2014/15, summary of results from alternative scenario modelling (Frontier trend)



Figure C.5 New South Wales - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO planning case (Frontier trend - jurisdictional model)

35.0				
20.0		30.4	30.0	31.0
50.0	25.4			
25.0				
20.0				
15.0	-		_	_
10.0				
5.0	_		_	
/kWh (nominal) -	Base Year	Current Year	Projection	Projection
	2011/12	2012/13	2013/14	2014/15
energy savings	0.1	0.2	0.2	0.2
Small scale renewable energy scheme	0.6	0.6	0.2	0.2
Large Scale Renewable Energy Target	0.3	0.5	0.5	0.5
Retail Margin	1.3	1.6	1.5	1.6
Retail	1.4	1.5	1.5	1.5
Feed-in Tariffs	0.2	1.3	1.6	1.6
Distribution	11.9	11.8	11.5	11.9
Transmission	2.2	3.6	3.8	4.1
Carbon costs				
		2.0	2.1	2.3
Wholesale	7.4	2.0 7.6	2.1 7.0	2.3 7.1

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

## Figure C.6 New South Wales - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO slow rate of change case (Frontier trend)

35.0				
30.0		30.4	30.1	31.1
	25.4	-		-
25.0				
20.0		_		_
15.0	-	_		
10.0				_
5.0				
c/kWh (nominal)	Bace Vear	Current Voor	Projection	
				Projection
	2011/12	2012/13	2013/14	Projection 2014/15
energy savings	2011/12 0.1	2012/13 0.2	2013/14 0.2	Projection 2014/15 0.2
energy savings Small scale renewable energy scheme	2011/12 0.1 0.6	0.2 0.6	0.2 0.2	Projection 2014/15 0.2 0.2
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target	2011/12 0.1 0.6 0.3	0.2 0.6 0.5	0.2 0.2 0.5	Projection 2014/15 0.2 0.2 0.5
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target Retail Marg in	2011/12 0.1 0.6 0.3 1.3	2012/13 0.2 0.6 0.5 1.6	2013/14 0.2 0.2 0.5 1.5	Projection 2014/15 0.2 0.2 0.5 1.6
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target Retail Marg in Retail	2011/12 0.1 0.6 0.3 1.3 1.4	2012/13 0.2 0.6 0.5 1.6 1.5	2013/14 0.2 0.2 0.5 1.5 1.5	Projection 2014/15 0.2 0.2 0.5 1.6 1.5
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target Retail Margin Retail Feed-in Tariffs	2011/12 0.1 0.6 0.3 1.3 1.4 0.2	0.2 0.6 0.5 1.6 1.5 1.3	0.2 0.2 0.5 1.5 1.5 1.6	Projection 2014/15 0.2 0.2 0.5 1.6 1.5 1.6
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target Retail Margin Retail Feed-in Tariffs Distribution	2011/12 0.1 0.6 0.3 1.3 1.4 0.2 11.9	0.2 0.6 0.5 1.6 1.3 1.8	2013/14 0.2 0.5 1.5 1.5 1.6 11.5	Projection 2014/15 0.2 0.5 1.6 1.5 1.6 1.5 1.6 11.9
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target Retail Marg in Retail Feed-In Tariffs Distribution Transmission	2011/12 0.1 0.6 0.3 1.3 1.4 0.2 11.9 2.2	0.2 0.6 0.5 1.6 1.5 1.3 11.8 3.6	2013/14 0.2 0.2 0.5 1.5 1.5 1.6 11.5 3.8	Projection 2014/15 0.2 0.5 1.6 1.5 1.6 11.9 4.1
energy savings Small scale renewable energy scheme Large Scale Renewable Energy Target Retail Marg in Retail Feed-In Tariffs Distribution Transmission Carbon costs	2011/12 0.1 0.6 0.3 1.3 1.4 0.2 11.9 2.2 -	0.2 0.6 0.5 1.6 1.5 1.3 11.8 3.6 2.0	2013/14 0.2 0.2 0.5 1.5 1.5 1.6 11.5 3.8 2.2	Projection 2014/15 0.2 0.5 1.6 1.5 1.6 11.9 4.1 2.2

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

Figure C.7 New South Wales - residential electricity prices from 2011/12 to 2014/15, market cost based approach, AEMO planning case



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

### Figure C.8 New South Wales - residential electricity prices from 2011/12 to 2014/15, market cost based approach, AEMO slow rate of change case (Frontier trend)



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

### C.7 Australian Capital Territory

In section 3.4, the wholesale electricity component in 2013/14 for the Australian Capital Territory is modelled using a market based approach.

Figure C.9 compares the results for the Australian Capital Territory under the different scenarios for the market based approach using the trends derived from Frontier's modelling. The LRMC approach was not modelled for the Australian Capital Territory.

# Figure C.9 Australian Capital Territory - residential electricity prices from 2011/12 to 2014/15, summary of results from alternative scenario modelling



Figure C.10 Australian Capital Territory - residential electricity prices from 2011/12 to 2014/15, market cost based approach, AEMO planning case (Frontier trend - jurisdictional model)



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

## Figure C.11 Australian Capital Territory - residential electricity prices from 2011/12 to 2014/15, market cost based approach, AEMO slow rate of change case (Frontier trend)

25.0				
20.0		19.2	19.8	20.2
	16.9			
15.0				
10.0		_		
5.0				
c/kWh (nominal)	Base Year	Current Year	Projection	Projection
Greenhouse gas abatement scheme	0.1	-	-	-
Small Scale Renewable Energy Scheme	0.8	0.7	0.3	0.3
Large Scale Renewable Energy Target	0.5	0.4	0.5	0.5
Retail Margin	0.9	1.0	1.0	1.0
Retail	1.1	1.1	1.1	1.2
Feed-in Tariffs	0.3	0.4	0.5	0.5
Distribution	5.9	6.1	6.5	7.0
Transmission	1.4	1.7	1.8	1.9
Carbon costs	-	2.1	2.5	2.3

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

### C.8 Victoria

In section 3.5, the wholesale electricity component in 2013/14 for Victoria is modelled using a market based approach.

Frontier modelled the wholesale electricity component using both the LRMC and the market based approaches. Figure C.12 compares the results for Victoria under the different scenarios and different approaches using the trends derived from Frontier's modelling.



### Figure C.12 Victoria - residential electricity prices from 2011/12 to 2014/15, summary of results from alternative scenario modelling

#### Figure C.13 Victoria - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO planning case (Frontier trend)



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Values are based on standing offers which may significantly overstate prices compared to market offers.

#### Figure C.14 Victoria - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO slow rate of change case (Frontier trend)



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Values are based on standing offers which may significantly overstate prices compared to market offers.

Figure C.15 Victoria - residential electricity prices from 2011/12 to 2014/15, Market cost based approach, AEMO planning case (Frontier trend - jurisdictional approach)



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding

3. Values are based on standing offers which may significantly overstate prices compared to market offers.

#### Victoria - residential electricity prices from 2011/12 to 2014/15, Figure C.16 Market cost based approach, AEMO slow rate of change case (Frontier trend)

	40.0				
	35.0		32.3	33.9	35.3
	30.0	28.8			_
	25.0				
	20.0	-			-
	15.0	-			
	10.0				
	5.0		_		-
c/kWh (nominal)	100	Base Year 2011/12	Current Year 2012/13	Projection 2013/14	Projection 2014/15
energy savings		0.4	0.4	0.4	0.4
Small Scale Renewable	Energy Scheme	0.5	0.3	0.1	0.1
Large Scale Renewable	Energy Target	0.4	0.7	0.7	0.8
Retail Margin		-	×		-
Retail and wholesale		17.5	17.7	17.9	18.2
Feed-in Tariffs		0.2	0.2	0.2	0.2
Distribution		8.5	9.5	10.6	11.8
Transmission		1.3	1.3	1.3	1.4
Carbon costs		8	2.2	2.7	2.5
Wholesale		-			-

Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

3. Values are based on standing offers which may significantly overstate prices compared to market offers.

### C.9 South Australia

In section 3.6, the wholesale electricity component in 2013/14 for South Australia was modelled using a market based approach.

Frontier modelled the wholesale electricity component using both the LRMC and the market based approaches. Figure C.17 compares the results for South Australia under the different scenarios and different approaches using the trends derived from Frontier's modelling.



### Figure C.17 South Australia - residential electricity prices from 2011/12 to 2014/15, summary of results from alternative scenario modelling

Figure C.18 South Australia - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO planning case (Frontier trend)



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

# Figure C.19 South Australia - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO slow rate of change case (Frontier trend)



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

Figure C.20 South Australia - residential electricity prices from 2011/12 to 2014/15, Market based approach, AEMO planning case (Frontier trend - jurisdictional model)



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

Figure C.21	South Australia - residential electricity prices from 2011/12 to
-	2014/15, Market cost based approach, AEMO slow rate of change
	case (Frontier trend)

40.0				
35.0		33.7	22.0	32.8
	29.9		32.0	
30.0				
25.0				
20.0			_	_
15.0		_	_	_
10.0				
5.0		_		
c/kWh (nominal)				
	Base Year 2011/12	Current Year 2012/13	Projection 2013/14	Projection 2014/15
Residential Energy Efficiency Scheme	0.3	0.3	0.3	0.3
Small Scale Renewable Energy Scheme	0.6	0.6	0.3	0.2
Large Scale Renewable Energy Target	0.4	0.4	0.7	0.8
Retail Margin	1.5	1.7	1.3	1.3
Retail	2.6	2.7	2.7	2.8
Feed-in Tariffs	0.0	2.2	1.5	1.3
Distribution	10.9	11.8	13.9	14.6
Transmission	2.9	3.2	3.4	3.6
			1.4	2.4
Carbon costs	2	1.4	1.4	3.4

#### Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

### C.10 Tasmania

In section 3.7, the wholesale electricity component in 2013/14 for Tasmania was modelled using the LRMC approach.

Figure C.22 compares the results for Tasmania under the different modelled scenarios using the trends derived from Frontier's modelling. Only the LRMC approach was modelled for Tasmania.



Figure C.22 Tasmania - residential electricity prices from 2011/12 to 2014/15, summary of results from alternative scenario modelling

#### Figure C.23 Tasmania - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO planning case (Frontier trend jurisdictional model)



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

#### Figure C.24 Tasmania - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO slow rate of change case (Frontier trend)



Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

### C.11 Western Australia

In section 3.8, the wholesale electricity component in 2013/14 for Western Australia was modelled using the LRMC approach.

Figure C.25 compares the results for Western Australia under the different modelled scenarios using the trends derived from Frontier's modelling. Only the LRMC approach was modelled for Western Australia.





Figure C.26 Western Australia - residential electricity prices from 2011/12 to 2014/15, LRMC approach, AEMO planning case (Frontier trend - jurisdictional model)



1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.





Notes:

1. Values are nominal (not adjusted for inflation) and exclusive of GST.

2. Numbers may not add due to rounding.

### C.12 Northern Territory

No additional modelling was undertaken for the Northern Territory.